

SEB[®]

NET-PATH[™]

Installation and Operation Guide



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- Updated DC input description (Chapts. 1 & 2).

09/05 - Revision F

- Updated the Script command line interface command with the “ScriptParm” option (Chapt. 3).

07/05 - Revision E

- Added “Table 4-2: Country Code Definitions for Modem Type 239.”

06/05 - Revision D

- Updated “Table 3-1: NET-PATH Commands” with RLOGINIP, RLOGINHOST, and XPARA commands.

04/05 - Revision C

- Added “Jumper Connections” (Chapter 5).

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- Updated “Table 2-3: Contact Sensor Strap Options.”

02/05 - Revision A

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Warning

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generates, uses, and can emit radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

Caution

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch telephone wires or terminals that are not insulated unless the telephone line is disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

FCC Notice

FCC Requirements for Consumer Products

The Federal Communications Commission (FCC) has established Rules which permit this device to be directly connected to the telephone network. This equipment complies with FCC Part 68 and TIA 968. Standardized jacks are used for these connections. This equipment should not be used on party lines or coin lines.

If this device is malfunctioning, it may also be causing harm to the telephone network; this device should be disconnected until the source of the problem can be determined and until repair has been made. If this is not done, the telephone company may temporarily disconnect service.

The telephone company may make changes in its technical operations and procedures: if such changes affect the compatibility or use of this device, the telephone company is required to give adequate notice of the changes.

If the telephone company requests information on what equipment is connected to their lines, inform them of:

- a) The telephone number that this unit is connected to
- b) The ringer equivalence number
- c) The USOC jack required [RJ-11-C], and
- d) The FCC Registration Number

Items (b) and (d) are indicated on the label. The ringer equivalence number (REN) determines how many devices can be connected to your telephone line. In most areas,



the sum of the RENs of all devices on any one line should not exceed five (5.0). If too many devices are attached, they may not ring properly.

An FCC compliant telephone cord and modular plug is provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack, which is Part 68 compliant. See installation instructions for details.

The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device, including fax machines, to send any message unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent and an identification of the business or other entity, or other individual sending the message and the telephone number of the sending machine or such business, other entity, or individual. (The telephone number provided may not be a 900 number or any other number for which charges exceed local or long-distance transmission charges.)

Service Requirements

In the event of equipment malfunction, all repairs should be performed by our Company or an authorized agent. It is the responsibility of users requiring service to report the need for service to our Company or to one of our authorized agents. Service can be facilitated through our office at:

Teltronics Incorporated
2150 Whitfield Industrial Way
Sarasota, FL 34243-4046
TEL: (941) 753-5000

Canadian Notice

Canadian Department of Communications Requirements

- This equipment meets CS-03 Requirements for Terminal Equipment and Certified Protection Circuitry of the Canadian Department of Communications, meeting telecommunications requirements for safety, operation, and telephone network protection. The Department does not guarantee satisfactory equipment operation.
- Before installing this equipment:
- Be sure your local telecommunications company allows you to connect your equipment to its lines.
- Use approved connectors. Most companies prohibit using customer-supplied jacks. If using a single line, you may be able to use a telephone extension cord.
- Electrical ground connections for the power utility lines, telephone lines, and internal metallic water pipes are connected together, particularly in rural areas. **DO NOT ATTEMPT TO MAKE GROUND CONNECTIONS YOURSELF.** Contact the appropriate electrical inspection authority or electrician.
- Any equipment malfunctions, or repairs or alterations you make to this equipment, may cause the telecommunications company to ask you to disconnect the equipment. All repairs to this equipment should be made by an authorized Canadian maintenance facility designated by the suppliers.
- Compliance with the above conditions may not prevent degradation of service in some situations.



The Canadian Department of Communications requires notification of the following:

- Equipment Manufacturer: Teltronics, Inc.
- Equipment Load Number: SEBea – 9
- Connecting arrangement code: CA11A

The load number (LN) assigned to each terminal device denotes the ratio of its load to the total load connected to a telephone loop. The load number is used by the device to prevent overloading. The termination on a loop may consist of any combination of devices, subject only to the requirement that the load number total for all the devices does not exceed 100.

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassent les limites applicables aux appareils numérique de la class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

Professional installation only, no user-serviceable parts inside except as indicated in this installation guide.



Warning *Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.*

Important Safety Instructions

When using your telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

- Do not use this product near water, for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning
- Do not use the telephone to report a gas leak in the vicinity of the leak.
- Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.

Save These Instructions

Importantes Mesures De Sécurité

- Certaines mesures de sécurité doivent être prises pendant l'utilisation de matériel téléphonique afin de réduire les risques d'incendie, de choc électrique et de blessures. En voici quelquesunes:
- Ne pas utiliser l'appareil près de l'eau, p. ex., près d'une baignoire, d'un lavabo, d'un évier de cuisine, d'un bac à laver, dans un sous- sol humide ou près d'une piscine.
- Éviter d'utiliser le téléphone (sauf s'il s'agit d'un appareil sans fil) pendant un orage électrique. Ceci peut présenter un risque de choc électrique causé par la foudre.
- Ne pas utiliser l'appareil téléphonique pour signaler une fuite de gaz s'il est situé près de la fuite.
- Utiliser seulement le cordon d'alimentation et le type de piles indiqués dans ce manuel. Ne pas jeter les piles dans le feu: elles peuvent exploser. Se conformer aux règlements pertinents quant à l'élimination des piles.

Conserver Ces Instructions



Communication Certification Laboratory

This product has been safety tested and found compliant to USA safety standards. SEBea is certified the UL 60950 safety standard for Information Technology Equipment. This ensures safe operation in the office business environment.





European Community Related Requirements

Warning

This is a Class A Product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.”

This equipment has been tested and is compliant with the EMC and Low Voltage directives of the European Community. A system with the CE marking meets or exceeds the following technical standards:

- EN 55022 "Limits and methods of measurement of radio interference characteristics of information technology equipment"
- EN 50024-1 "Information technology equipment - Immunity characteristics - Limits and methods of measurement"
- EN 60950 "Safety of information technology equipment, including electrical business equipment"
- In addition to the above standards, this system has also met the requirements of the following European standards:
- EN 61000-3-2 "Disturbances in supply systems caused by household appliances and similar electrical equipment Part 2: Harmonics"
- EN 61000-3-3 "Disturbances in supply systems caused by household appliances and similar electrical equipment Part 3: Voltage fluctuations"



International Modem Operation

Using the SEBea in Austria, Belgium, Germany, Spain and Switzerland

Teltronics is required to provide the following information as a condition of the telecommunications conformity to Common Technical Regulation 21 (CTR 21/TBR 21). You may also be responsible for meeting requirements other than those outlined in this document. **This SEBea product requires an RJ11 adapter to be installed on any line that receives Metering Pulses.** Metering pulses are used for billing purposes and are normally not present unless requested by the subscriber. The subscriber may request the Network Provider to add or remove Metering Pulse service. Metering pulses are present on all lines in Switzerland.

TeleAdapt Part number TLFTR (www.TeleAdapt.com) is the metering pulse filter recommended by Teltronics.



Using the SEBea in Norway & Spain

This product complies with all of the standard DC voltage requirements as specified in the EU standards document CTR 21/TBR 21. However, the SEBea does not meet the more unusual requirements for maximum voltage in the loop state, as specified in specification EG 201 121 V1.1.1 advisory note NO 02 for Norway and Advisory note ES 01 for Spain. In the unlikely event of low loop current, the DC voltage may exceed the 7.4 V maximum. If this occurs, the user may experience problems with the Central Office recognizing an off-hook condition. This condition could occur in the event that the subscriber is at the end of very long telephone lines, which are attached to older Central Office equipment.

Modem Configuration Restrictions

The modem used in this product is configured to meet specific country requirements. This configuration is in the form of AT command settings sent to the modem prior to installation. Changing settings may cause a modem to become non-compliant with national telecom requirements in specific countries.

SEBea factory settings configure the modem for use in North America. If you are installing the SEBea in a different country, do not connect the modem to the telephone interface until the proper country code is entered through the user interface switches on the LCD front panel.



Declaration of Conformity

We, Teltronics, Inc. located at 2150 Whitfield Industrial Way, Sarasota, Florida, USA 34234 declare under our sole responsibility that the SEBea product to which this declaration relates is in conformity with the following standards and / or other normative documents:

Low Voltage Directive 73/23/EEC

- IEC 609050 3rd Edition
- IECCEB CB-Scheme US/781/ITS

EMC Directive 89/336/EEC

- EN55022 Class A
- EN55024-98
- EN61000-3-2
- EN61000-3-3
- EN60950

R&TTE Directive 1999/5/EC

- CTR 21/TBR 21

The technical documentation relevant to the above equipment will be held at:

Teltronics LTD
The Sun
27 Weston Rd.
Olney
Buckinghamshire
UK

Warranty and Repair

Warranty Statement. Teltronics warrants its products are free from defects in material and workmanship for a period of one year from the shipping date. Teltronics tracks serial numbers for its products. Teltronics can use the serial number to determine the shipping date.

Return for Repair. Customers can return to Teltronics, at customer's risk and expense, any Teltronics product that fails in normal service during the warranty period. The failed product will be repaired or replaced at the option of Teltronics and returned to the customer at Teltronics' risk and expense. Correction of defects by repair or replacement shall constitute the fulfillment of all obligations of Teltronics with respect to any product sold.

This warranty shall be void for any product that was subjected to (1) alteration or repair by persons not authorized by Teltronics, (2) misuse by negligence or accident, (3) operation beyond the design range, or (4) improper test or mishandling in any way.

Products sold by Teltronics but manufactured by others, such as, but not limited to, tape drives, printers, and CRT terminals, carry the warranty of the manufacturer. Diskettes are warranted for a period of sixty days from date of shipment. Additionally, Teltronics shall only be required to provide replacement or repair software whose purpose is to correct defects not disclosed in the Teltronics System Difficulties Product Bulletin in effect at the time of sale by Teltronics.



The warranty of repair or replacement at Teltronics' facility contained herein shall be the exclusive remedy for breach of warranty and shall be in lieu of and excludes all other express or implied warranties of merchandise, fitness, or otherwise.

Teltronics shall not be liable for any special or consequential damages or for loss, damage or expense arising from delays in delivery, use of the equipment or arising from the inability to use the equipment with any other equipment or from any other cause.

Spare Parts. Teltronics recommends that spare parts be maintained by those responsible for sustaining end-user, Teltronics equipment. Recommendations for spare parts inventory can be obtained from Teltronics upon request.

Spare parts for emergencies can be obtained from Teltronics, when available, at the customer's expense. Such spare parts will be new or reconditioned parts and will carry a new parts warranty of ninety days from the shipping date.

Return Authorization. A return authorization number must accompany all equipment returned to Teltronics for repair or replacement. This number is obtained by telephone from the Customer Repair Department of Teltronics. This number shall be used for all paperwork or telephone transactions between the customer and Teltronics and shall be included in the shipment of the returned equipment and clearly marked on the outside of shipping containers.

A description of the mode of failure or exhibited trouble symptoms shall also accompany the equipment in order to assist Teltronics in better serving the customer's needs.

When equipment returned for repair is found to be free of defects, the customer will be billed in accordance with the then-current out-of-warranty repair charges.

Design Changes. Teltronics reserves the right to make any changes in design or construction of its products at any time without incurring the obligation to make any change whatsoever to products previously shipped.



Preface

This manual provides instructions for installing, verifying, and troubleshooting the NET-PATH remote agent device.

The NET-PATH is a highly flexible, solid-state data-collection and events-reporting device that you can use with a wide variety of applications. The NET-PATH is a critical component of a larger system that usually consists of a computer, application software, and one or more NET-PATH units. While this manual does not cover specific applications, it does cover how to properly install and check a NET-PATH.

Before you can use the NET-PATH, you must program it with the necessary options and parameters. This involves downloading a database to the NET-PATH. A detailed discussion of the database and its interaction with the NET-PATH is beyond the scope of this manual. This manual only covers the database to that point necessary for the installer to ensure the NET-PATH functions properly.

This manual consists of the following sections:

Physical Description And Specifications: Details the specifications and requirements of the NET-PATH.

Installation: Lists the requirements for installation, connector pin designations, and a procedure for verifying the proper functions of the NET-PATH.

Operation: Includes instructions for accessing the NET-PATH Interactive and Transparent modes. It also includes a description of the NET-PATH function when events occur, and steps users can follow to retrieve information.

Indicators and Diagnostics: Describes the front panel indicators and their meaning. It also describes possible causes and actions necessary to rectify improper operations.

Serviceable Components: Lists the NET-PATH components that can be upgraded or replaced and includes their service procedures.

Index: Locates the first, major usage of important terms.



Notes



1

Description and Specifications

Introduction

NET-PATH is available in several configurations. All standard models include:

- 8 serial ports, 1 NIC
- 1 56K BPS modem
- 16 contact sensors
- 2 output relays (available through RJ45 connector)
- 1 DC voltage sensor (requires optional external cable)
- 2 temperature sensors, one internal, one external (external sensor requires additional equipment)
- integrated UPS
- LCD display panel
- audible alarm
- basic event processing software including Python script execution

Configuration variables include four RS232 ports, eight contact sensors, and SNMP Segment Management software, AC or DC input power.

Determining the NET-PATH Model

The serial number and model information is on a label attached to the bottom of the unit.



NET-PATH Model Structure

Figure 1-1 shows how to use the model number to determine basic hardware functions. The figure shows model 43308-U2OSA, which includes four serial ports, a North American modem, 20 MB of memory, and networking with management for twenty network elements.



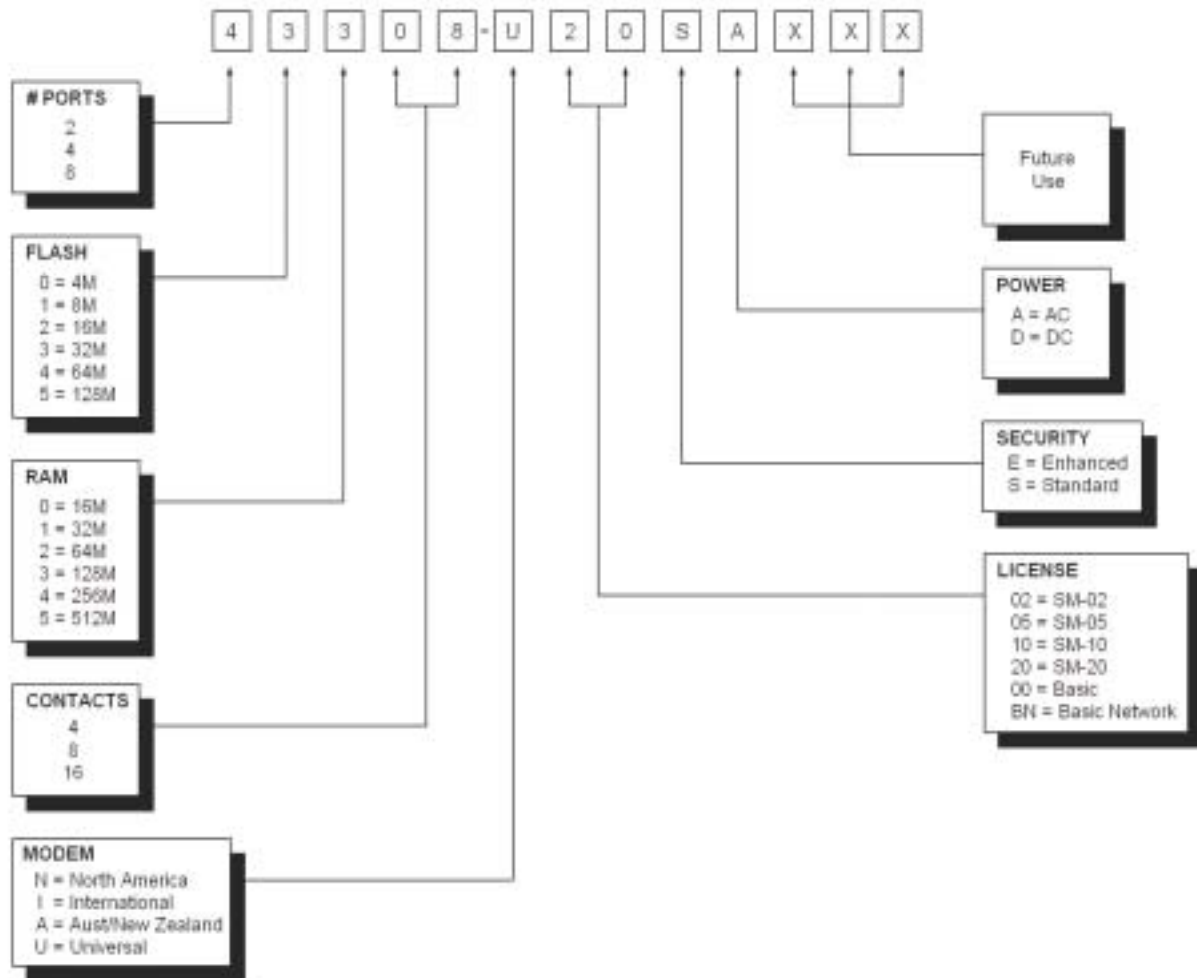


Figure 1-1 NET-PATH Model Number Format

All basic units have four or eight host ports. Technicians can use one of these ports as a dedicated local port, or as a standard host port.

Description

The NET-PATH is housed in an aluminum case as shown in the following figure.



Figure 1-2 NET-PATH

Connections for commercial power, the host systems, external sensors, terminal, and the telephone line are on the back of the unit. See “Connections” on page 2-3. The LED status indicators on the front indicate the power status, battery charge status, application or database validity, and alarm conditions. See “Console Connector” on page 4-1.



Hardware Features

Table 1-1 lists the NET-PATH hardware features, connector arrangements, and field upgrade or replacement.

Table 1-1: Hardware Features and Connectors

Hardware Features	Description	Standard Configuration	Options
Communication Ports	RS232, make RJ45, DTE	8 RS232 ports	4 ports
Network	10/100 Base-T	10/100 Base-T	None
Contact Sensors	Hard contact sensors	16 contacts	N/A
Modem	56K, class 2 FAX, caller ID	US version	optional International and New Zealand
Flash Memory	Permanent Data Storage. Contains application and user data. Non-volatile	32 MB, embedded	None
SDRAM Operating Memory	Available memory for operating system and applications. Volatile, downloadable.	128 MB DIMM, single socket	None
RTC	Real Time Clock	Yes	N/A
Output Controls	Controlled output devices	2 SPDT relays	None
Analog Sensors	Analog sensors the report temperature and voltage levels	2 temperature (-10 to 190°F) one internal/one external, 1 DC voltage (+/- 60 VDC)	optional external temperature sensors
UPS Battery	UPS to maintain full function	2 hour, field replaceable batteries	None
System Power	Main system power source	110/220 VAC, 50-50 Hz	48 VDC power consumption, 30.1 watts
Indicators	System diagnostics	LEDs for battery, power, general software health, and alarm condition. 4x20 LCD display	None
Power Control	All modems and the NET-PATH main board support remote power cycling	N/A	N/A
Watchdog	Hardware watchdog timer reset by software.	Yes	N/A
Sleep Battery	Provides long-term backup for RTC.	Yes, lithium (field replaceable)	N/A



Hardware Specifications

Modem

- 56K internal modem
- V.42 MNP (2-4) error correction
- V.42 BIS MNP5 data compression
- Group 3 Fax

Microprocessor

- Motorola 860T
- 32 MB FLASH Memory
- 128 MB S DRAM

Dimensions

- Height 1.75 inches
- Width 17 inches (fits 19" rack)
- Depth 10.5 inches

Weight

- Approximately 12 lb.

Environmental Requirements

- 50° to 110° F operating temperature (10° to 43° C)
- 20° to 140° F non-operating temperature (-29° to 60° C)
- 20% to 80% relative humidity, nonconducting

Power Requirements

Input power	Voltage	Current	Watts	BTU/hr
AC	110 volts	180 mA	19.80	67.56
DC*	48 volts	250 mA	12.00	40.95

*The DC input range is -36 V to -72 V; -48 VDC nominal.

Host System Interface

Depending on the options you choose, the NET-PATH can have four to eight EIA RS-232-C serial ports. Connectors for the NET-PATH (labeled Host 1 through Host n) are configured as Data Terminal Equipment (DTE), using RJ45 male connectors. Transmission rates can vary from 110 BPS to up to 115 KBPS.

Telephone Line Interface

The telephone connection is a modular RJ11C interface. Pulse dialing or tone signaling (DTMF) is a software option.



Physical Sensor Inputs

Depending on the model you choose, the NET-PATH provides multiple RJ45 connections to connect to external physical sensors. The terminals connect to circuits supplying approximately one milliampere when the terminals are shorted. You can set each pair of terminals individually, via software, to detect normally open or normally closed contacts.

Memory Backup

A 3.0 VDC lithium battery maintains a real-time clock for four to five years. This battery is used when external and internal power is not available.

The NET-PATH provides non-volatile data storage using flash memory technology. Flash memory does not require a power source to retain stored data.

MTBF

Mean-Time-Between-Failure (MTBF) is in excess of 60,000 hours, per Bell IP 10425.

Battery Backup

When fully charged, a 12 VDC rechargeable battery provides full operation for two hours.

Battery Charge Time

The battery requires five minutes of charging for each minute of battery use. For example, a battery used for thirty minutes needs approximately two and one half hours to fully recharge.



Notes



2

Installation

Site Requirements

When selecting a site for your NET-PATH, refer to the electrical and environmental requirements, see "Environmental Requirements", page 1-4. The NET-PATH is rated for a wide range of operating temperatures and humidity. However, the best performance and longest life occurs when the temperature is 72° F and relative humidity is 50%. Do not place the NET-PATH in a cabinet where poor air circulation could cause the temperature to rise. Excessively dry areas can cause static charge buildup resulting in operating faults and the destruction of semiconductor devices.

Unpacking

Before opening the shipping container, inspect it for damage. If the container looks damaged, do not unpack it. Contact the carrier and report the damage. If the container passes inspection, do the following:

- 1 Open the package and save all packaging materials.
- 2 Visually inspect the unit and inventory parts. If the unit appears damaged or if parts are missing, contact the NET-PATH supplier.
- 3 Remove the modem cable.
- 4 Remove the cables (if supplied).
- 5 Remove the power cord.
- 6 Remove the NET-PATH.



Rack Mount Instructions

Find a suitable location on the rack to mount the NET-PATH device. Leave enough room for cables and locate the device within 5 feet of the power source. When mounted, the NET-PATH requires 1.75 inches of rack space. We recommend you allow at least a .5-inch gap on the top and bottom to support convection ventilation and servicing. We provide two sets of screws that support most rack configurations.

19-Inch Rack Installation - Front Panel Forward

To install the chassis in a 19-inch rack with the front panel forward, attach the rack-mount brackets as shown below.

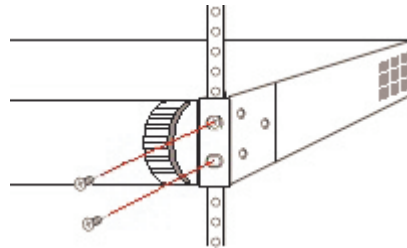


Figure 2-1 Front Mount

19-Inch Rack Installation - Center Mount for Telco Rack

Using the screws provided, attach the rack-mount bracket assemblies to the chassis as shown below.

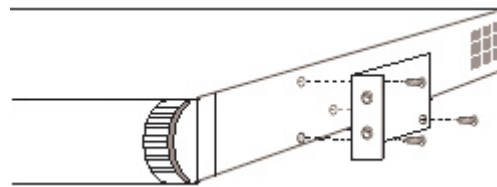


Figure 2-2 Side Mount



Connections

Connect the host port lines, telephone line, physical sensors, network connections, and power supply connections to the appropriate sockets on the NET-PATH connection panel.

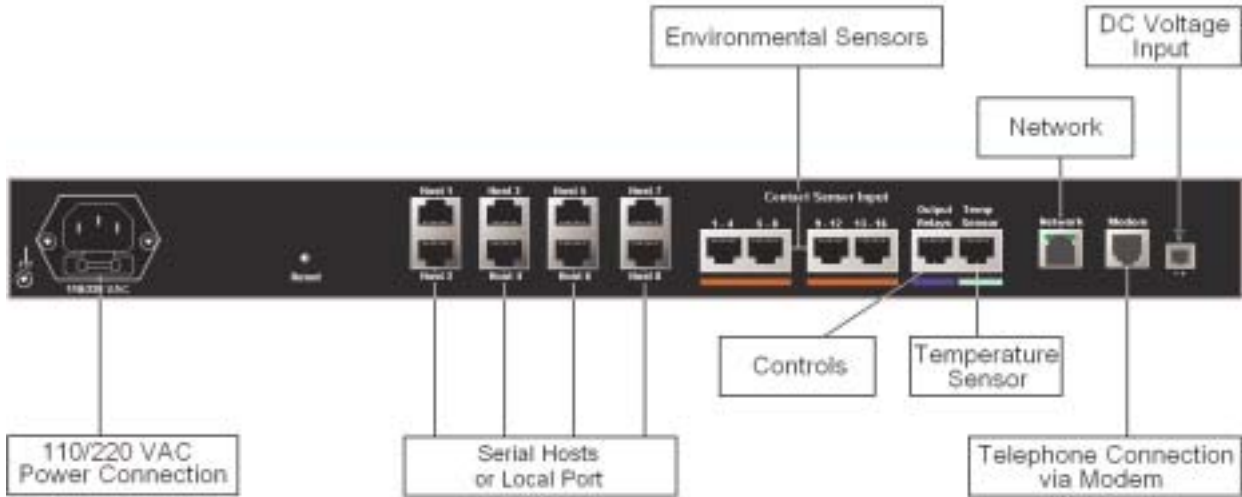


Figure 2-3 NET-PATH Connection Panel with 110/220 VAC Power Connection

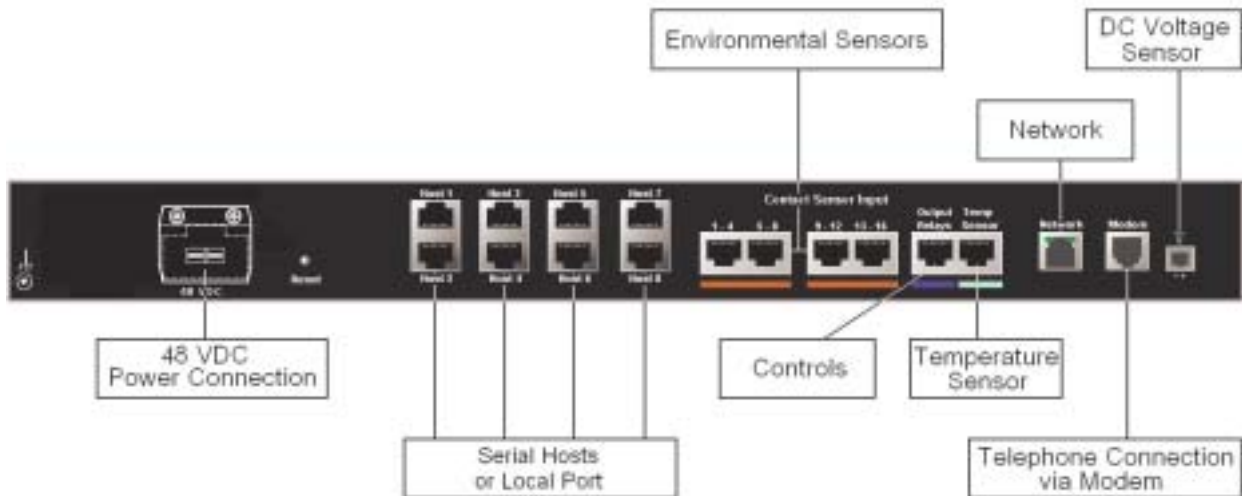


Figure 2-4 NET-PATH Connection Panel with 48 VDC Power Connection










RS232C Connections

Connectors for the NET-PATH (labeled Host 1 through Host n) are configured as Data Terminal Equipment (DTE) and use RJ45 connectors.

Connect the cables from the NET-PATH host ports to the proper connectors on the host device.

If your host system does not provide the DSR signal, you must loopback the DSR and RTS signals on the end of the cable connected to the host and ensure the signal passes through to the cable to the remote agent. Doing so allows the remote agent to detect connector present from the host; however, it will not detect when the cable is unplugged. See Figure 2-5 for loopback configuration.

Table 2-1: Host Ports RJ-45 Connector Designations (DTE)

Pin	Signal	Description	Direction	Function
1	DSR	Data Set Ready	IN 	Must be ON (TRUE) to indicate HOST CONNECTED. OFF indicates HOST NOT PRESENT.
2	DCD	Data Carrier Detect	IN 	An inbound line from an external modem indicates that the carrier for the transmit data is ON.
3	DTR	Data Terminal Ready	OUT 	ON or OFF, depending on the application and options selected in the database. Usually ON when the NET-PATH is ready.
4	GND	Signal Ground		
5	RD	Receive Data	IN 	Data from the host device
6	SD	Send Data	OUT 	Data to the host device
7	CTS	Clear to Send	IN 	Hardware handshake will be ON when connected host is ready to receive.
8	RTS	Request to Send	OUT 	Hardware handshake will be ON (TRUE) when the NET-PATH is ready to send.



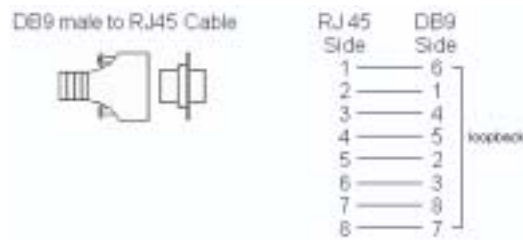


Figure 2-5 DB9 male to RJ45 Cable Connection Loopback

Telephone Line Connection

The RJ11C connector on the NET-PATH mates with standard modular cables commonly used with telephone equipment. Connect one end of the cable to the NET-PATH and the other end to the wall or floor jack assigned to the telephone line. The NET-PATH must connect to a dedicated telephone line for reliable operation. We recommend that you use an external, business telephone line.



Warning When configuring the NET-PATH with an international modem, do not connect the modem to the telephone network until you have programmed it with the appropriate country code. Use the NET-PATH LCD control panel to program the country code, as outlined in Chapter 4. If you are unsure of the modem type, you can review the model structure information (displayed on the serial number label attached to the bottom of the unit) See "Determining the NET-PATH Model", page 1-1.

Contact Sensor Inputs

The NET-PATH provides eight or sixteen contact sensors, depending on the model. The RJ45 jacks on the back of the NET-PATH accommodate four contact sensor inputs each. These jacks, labeled "Contact Sensor Inputs," are marked with a blue symbol. Each contact sensor input detects and reports when the state of an attached external device changes. You can configure each sensor as normally open or normally closed through software options in the NET-PATH database.

NET-PATH contact sensors support three types of input sensing. The first type of input sensing is based on RS232C and supports wet input. The second type is also based on RS232C and it supports dry input. The third type of input sensing supports devices that use RS423A signal levels. All three input types are explained in detail below. Each sensor has two internal jumpers that determine the mode of operation (RS232 vs. RS423). See "Contact Sensor Strap Options", page 2-8 for option strap details. The factory default setting for each sensor is based on RS232C input levels and supports wet and dry sensor inputs.

The general operation of each sensor is the same regardless of how it was configured. The sensor reports a change in state (inactive to active or active to inactive) when the input voltage passes through a detection threshold and remains at the new level for a user-defined period, usually several seconds.

Contact Sensor Wiring

For distances of up to 50 feet, we recommend a 24-gauge wire to connect the terminal pairs and the physical sensors. Use a larger gauge for longer runs. For reliable operation, the cable length should not exceed 1000 feet.



Dry Contact Applications

Dry contact applications are supported by optioning the sensor for RS232C logic (factory default). The NET-PATH contact sensor circuit provides approximately one milliampere of current when shorted. The user-supplied, physical sensors must provide a dry-contact mechanical closure, such as a relay contact, or the solid state equivalent. In dry-contact applications the external loop resistance must be 800 ohm or less to be considered active (closed) and 15k ohm or higher to be considered inactive (open). These values assume worst-case tolerances. Logical states include “active” and “inactive” and though database options, may be considered the “alarm” or “no-alarm” state, depending on the application requirements.

Wet Contact Application RS232C

Wet contact applications (such as TTL voltage levels) are supported by optioning the sensor for RS232C logic (factory default). Be sure to observe input polarity or damage to the external device may occur. The attached sensor must provide -15.0 to +.70 VDC for the active state and +2.3 to +15.0 VDC for the inactive state. These values assume worst-case tolerances.

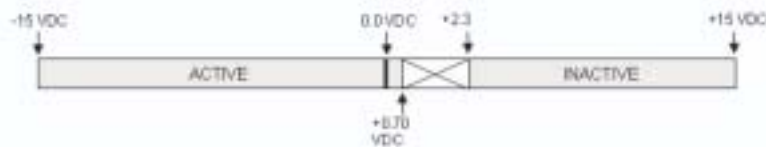


Figure 2-6 NET-PATH Input Sensor Optioned for RS232C



Caution This sensor circuit is designed for lower voltage applications. The input voltage is limited to 22 VDC maximum.

CONTACT SENSOR INPUT CIRCUITRY Optioned for RS232C Logic

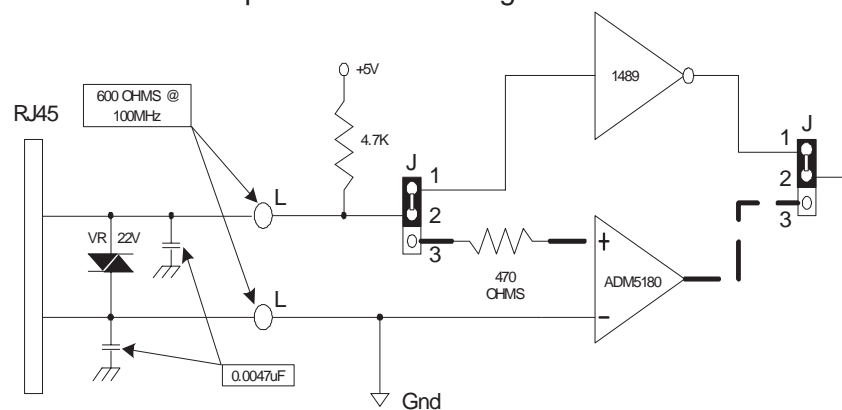


Figure 2-7 NET-PATH Input Sensor Circuitry for RS232C





Note Ground is common for all sensors but individual sensor grounds must be maintained to provide surge protection for each sensor circuit.

Wet Contact Application RS423A

You can option each sensor independently in order to support RS423A input levels. There are two option straps per sensor that need to be moved, as shown in the NET-PATH Contact Sensor Options Strap Locations, page 2-8. Once a sensor is strapped for RS423A logic, it will no longer support dry contact input or wet input levels that are described above. The attached sensor must provide -5.0 to -0.3 VDC for the active state and +0.3 to +15.0 VDC for the inactive state. Values outside this range will produce indeterminate results.

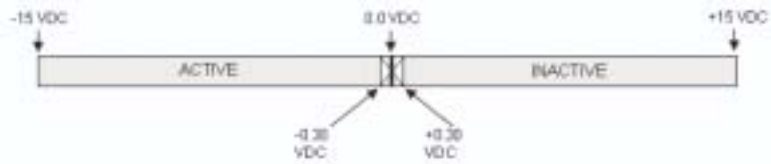
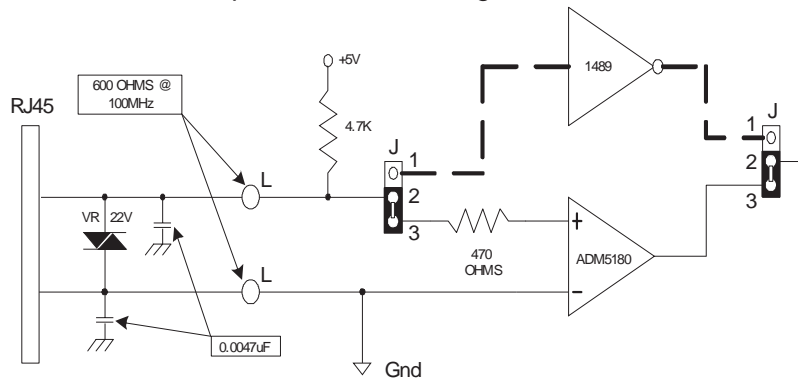


Figure 2-8 NET-PATH Input Sensor Optioned for RS423A

CONTACT SENSOR INPUT CIRCUITRY Optioned for RS423A Logic



CONTACT SENSOR DETECTION THRESHOLD FOR RS-423A LOGIC (ADM5180)	
Logic 1 (Inactive Threshold) + 0.3 V to + 15.0 V	Logic 0 (Active Threshold) - 0.3 V to - 15.0 V

Figure 2-9 NET-PATH Input Sensor Circuitry for RS423A

Contact Sensor Strap Options

The top cover must be removed to configure contact sensor strap options. NET-PATH units are shipped with the contacts set to RS232C mode, which is used for the majority of sensing applications. If the monitored device only supports RS423A output then select which contact(s) you want to use and strap them for RS423A input.

The following table provides the connector numbers for each sensor.

Table 2-2: Contact Sensor Strap Options

Sensor Number	Sensor Option Strap1	Sensor Option Strap 2	RS232C Input	RS423A Input
1	J28	J36	Pins 1 & 2	Pins 2 & 3
2	J29	J37	Pins 1 & 2	Pins 2 & 3
3	J30	J38	Pins 1 & 2	Pins 2 & 3
4	J31	J39	Pins 1 & 2	Pins 2 & 3
5	J32	J40	Pins 1 & 2	Pins 2 & 3
6	J33	J41	Pins 1 & 2	Pins 2 & 3
7	J34	J42	Pins 1 & 2	Pins 2 & 3
8	J35	J43	Pins 1 & 2	Pins 2 & 3
9	J44	J52	Pins 1 & 2	Pins 2 & 3
10	J45	J53	Pins 1 & 2	Pins 2 & 3
11	J46	J54	Pins 1 & 2	Pins 2 & 3
12	J47	J55	Pins 1 & 2	Pins 2 & 3
13	J48	J56	Pins 1 & 2	Pins 2 & 3
14	J49	J57	Pins 1 & 2	Pins 2 & 3
15	J50	J58	Pins 1 & 2	Pins 2 & 3
16	J51	J59	Pins 1 & 2	Pins 2 & 3



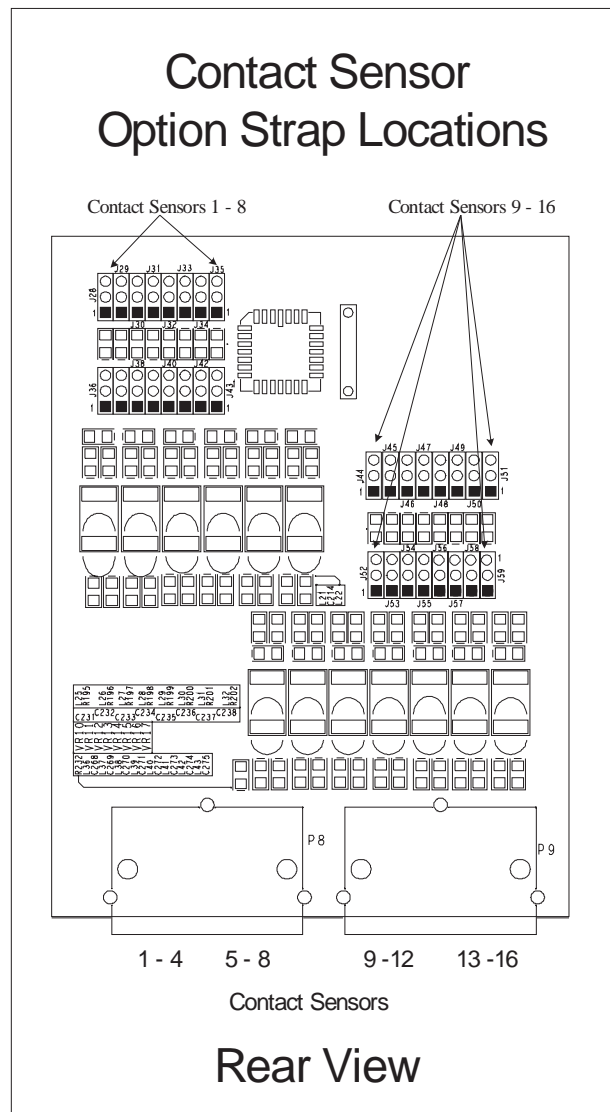


Figure 2-10 NET-PATH Contact Sensor Option Strap Locations



Caution If you do not have both option straps on a given sensor set to the same pin numbers then the sensor will be non functional. If you strap a sensor for RS423A input it will not support dry contact applications or standard wet contact applications. It is advisable to test each contact for proper operation after they are configured and the NET-PATH unit is operational (database downloaded).



Note The pin 1 designator for J59 is incorrect on the board. Pin one is properly referenced by the black square. For a closer view of the jumpers, see "Jumper Connections", page 5-4.

Contact Sensor Wiring Tables


Contact Sensors 1 - 4		
RJ45 Connector 8 Pin Female	Pin #	Contact Sensor Inputs
	1	Sensor 4+
	2	Sensor 3+
	3	Sensor 2+
	4	Sensor 1+
	5	Sensor 1 Gnd
	6	Sensor 2 Gnd
	7	Sensor 3 Gnd
	8	Sensor 4 Gnd

Figure 2-11 RJ45 Wiring Table - Contact Sensors 1 - 4


Contact Sensors 5 - 8		
RJ45 Connector 8 Pin Female	Pin #	Contact Sensor Inputs
	1	Sensor 8+
	2	Sensor 7+
	3	Sensor 6+
	4	Sensor 5+
	5	Sensor 5 Gnd
	6	Sensor 6 Gnd
	7	Sensor 7 Gnd
	8	Sensor 8 Gnd

Figure 2-12 RJ45 Wiring Table - Contact Sensors 5 - 8

NET-PATH four-port models support contact sensors 1– 8.




Contact Sensors 9 - 12		
RJ45 Connector 8 Pin Female	Pin #	Contact Sensor Inputs
	1	Sensor 12+
	2	Sensor 11+
	3	Sensor 10+
	4	Sensor 9+
	5	Sensor 9 Gnd
	6	Sensor 10 Gnd
	7	Sensor 11 Gnd
	8	Sensor 12 Gnd

Figure 2-13 RJ45 Wiring Table - Contact Sensors 9 - 12


Contact Sensors 13 - 16		
RJ45 Connector 8 Pin Female	Pin #	Contact Sensor Inputs
	1	Sensor 16+
	2	Sensor 15+
	3	Sensor 14+
	4	Sensor 13+
	5	Sensor 13 Gnd
	6	Sensor 14 Gnd
	7	Sensor 15 Gnd
	8	Sensor 16 Gnd

Figure 2-14 RJ45 Wiring Table - Contact Sensors 13 - 16

NET-PATH eight-port models support contact sensors 1–16.

Output Relays

The NET-PATH provides two output control relays configured as Single Pole, Double Throw (SPDT). The SPDT relay supports normally open or normally closed wiring configurations. Output relays can be configured to a default state using a combination of database programming and/or physical wiring. They can be controlled automatically by the software application or manually through the LCD display panel. The output control relays are available through an RJ45 connector labeled *Output Relays*, which is marked with a yellow symbol.




Output Relay Specifications

The relays are designed for low current applications based on the following relay specification.

- Max power: 45VA Max
- Max Voltage: 150VDC/VAC Max
- Max Current: 300ma Max

Output Relays Internal Wiring Table

Output Relays		
RJ45 Connector 8 Pin Female	Pin #	Contact Sensor Inputs
	1	C2 Norm Open
	2	C2 Norm Closed
	3	C2 Common
	4	Not used
	5	Not used
	6	C1 Norm Open
	7	C1 Norm Closed
	8	C1 Common

RJ45 Wiring Table

Figure 2-15 Output Relays Internal Wiring Table

Connect to normally open or normally closed outputs to obtain the desired connection state when the NET-PATH is powered off. The NET-PATH database has options to set the state of the relay to a known state after the database is loaded. From there the relay can be controlled manually or automatically through database parameters.

Voltage Sensor

The NET-PATH has one DC voltage sensor. The range of measurement is 0 - 60 VDC, with an accuracy and resolution of +/- .5 VDC. An optional 6 foot cable is available to support the DC voltage sensor feature. This sensor measures and reports the difference between the two input leads. Polarity must be observed. If polarity is reversed the reported values will be excessively high.

DC Voltage Sensor Internal Wiring Table


DC Voltage Sensor		
2 Pin Header	Pin #	DC Voltage Inputs
	1 - Left	Negative
	2 - Right	Positive

Figure 2-16 DC Voltage Sensor Internal Wiring Table





Note *The DC Voltage Sensor input wiring table is provided above, but connection to this connector should only be made using the optional DC Voltage sensor cable. Consult the factory for details.*

Temperature Sensor

The NET-PATH provides one internal temperature sensor and a connector for an optional external temperature sensor. The temperature range for both are from -10° to 190° F, with an accuracy and resolution of +/- 1° F. User-specified temperature deltas determine when change in temperature events are generated. The NET-PATH can be programmed to detect specific temperature values to determine reportable temperature events. Temperatures can be reported in Fahrenheit, Celsius, and Kelvin.

Internal Temperature Sensor

The internal temperature sensor is positioned near the UPS battery charging circuit and is used to detect excessive charging temperatures that may occur during abnormal charging conditions. The battery charger is turned off until the internal temperature returns to an acceptable level. You can program your NET-PATH to report specific internal temperature events based on database parameters, or generate an event when the battery charger turns off or on.

External Temperature Sensor

The optional external temperature sensor is available to monitor the temperature within the facility where the NET-PATH is installed. The database can be programmed to look for specific temperature values and take action, such as report events to the maintenance center or to activate a fan via a power control device.

The external temperature sensor, shown below, connects to the NET-PATH using a cable terminated with RJ45 male connectors at both ends. The sensor has two input jacks, either of which can be used.



Figure 2-17 NET-PATH External Temperature Sensor

Power

The NET-PATH comes with a standard AC power cord. The internal power supply is rated 110/220 V, 50/60 Hz. In international applications, the external power cord must be replaced with one that supports the local wiring configuration.

Reset Button

The recessed **Reset** button located on the back of the NET-PATH resets the microprocessor in the NET-PATH and initiates a warm boot. Both warm and cold boots result in the loss of active event data. Data stored in flash memory is retained, while the date stored in RAM is lost.

Battery

The NET-PATH contains a 12-volt, rechargeable battery. This battery does not require field maintenance. This battery life expectancy is one to three years. The NET-PATH reports battery conditions and capacity. Batteries can be replaced in the field.



Warning Use care when working with your battery. Do not touch the battery with conducting materials, such as rings, bracelets, keys, and tools. Do not open or mutilate the battery. Do not dispose of the battery in fire.

You risk explosion if you replace a battery with an incorrect type. Dispose of used batteries in accordance the manufacturer's instructions.

The UPS battery ships from the factory fully charged. The following graph shows the battery discharge characteristics when the unit is stored for an extended period. Extended storage does not affect the battery's ability to recharge to full capacity when the unit is operational.

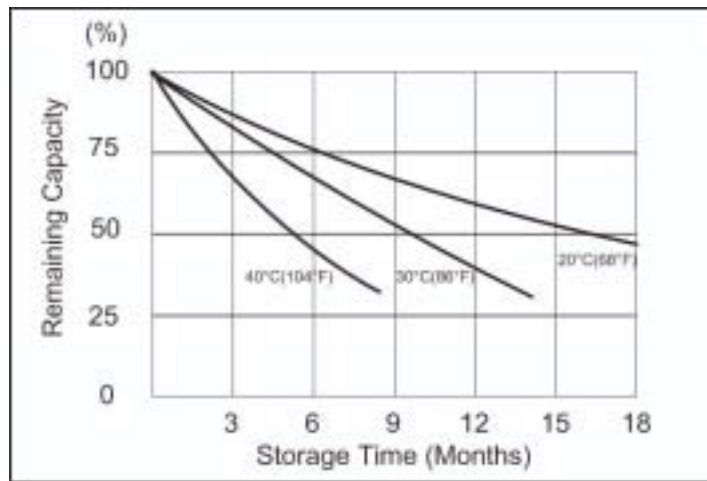


Figure 2-20 UPS Battery Self-Discharge Characteristics

Power-Up and Verification

Apply commercial power to the unit and observe the front panel indicators. After several seconds, the Power indicator should illuminate. The unit displays different conditions depending on the NET-PATH internal programming. The usual event sequence follows.

- 1 The Status indicator flashes while the unit is initializing
- 2 After the unit initializes, the Battery indicator illuminates. This indicator is on when the battery is fully charged and flashes when the battery is charging.
- 3 The NET-PATH displays the internal device libraries on the bottom line of the LCD display as the database loads. The Alarm LED flashes twice – once at the beginning of the database loading process and once at the conclusion of the process.
- 4 After a successful power-up, the NET-PATH LCD display panel displays a banner, the software Program Update Number (PUN), an off-hook indicator (OH: Y/N), and the current date and time.



Figure 2-21 NET-PATH LCD Display

- 22 The indicators for Power, Battery, and Status illuminate. The battery indicator may flash to indicate that the battery is charging.
- 23 If the Status indicator does not illuminate, the NET-PATH does not have a valid database loaded. Contact your network system administrator at the Polling and Analysis Center.

Internal Battery Test

To perform an internal battery test

- 1 Confirm that the internal battery is operating properly.
- 2 While the unit power is on, unplug the NET-PATH's power cord.
- 3 Verify the Status and Battery indicators are on and the Power indicator is off.
- 4 Restore commercial power to the NET-PATH and verify the Power, Status, and Battery indicators are on.
- 5 The Battery LED flashes to indicate the battery is charging.

Functional Verification

Verify that the NET-PATH can receive calls by initiating calls from the Polling and Analysis Center. If you can call the NET-PATH, it is ready for operation. Should problems occur during the NET-PATH installation, refer to "Troubleshooting", page 4-11 for troubleshooting procedures.

If the NET-PATH contains an international modem, you must enter the country code before the modem can function. "Country Code Definitions for Multi-Tech Modem Model MT5634SMI", page 4-6.



NET-PATH Test, Incoming

Inform your Polling and Analysis Center that the NET-PATH is ready to receive its database. The technician there should verify the database contains parameters for reporting fixed events, such as a change of state in sensor inputs. Use this capability to verify outgoing calls.

When the Polling and Analysis Center places a call to the NET-PATH, observe the following:

- 1 The Off-Hook indication (OH: Y) appears when the NET-PATH answers the call.
- 2 At the conclusion of the call, the Off-Hook indicator will display OH:N. It may take up to a minute for the LCD display to refresh and accurately display the conditions.
- 3 If you do not receive the call, see "Troubleshooting", page 4-11.

Transparency to Host

Perform a transparency test to verify the installation. After downloading the initial database to the NET-PATH, the system administrator or a technician at the Polling and Analysis Center should establish a transparent connection to each of the attached serial devices to verify that communication parameters are correct. If the Polling and Analysis Center is not available, you can go transparent to an attached host device using the NET-PATH Command Line Interface. See "Useful Command Line Interface Commands" on page 3-5.

If a serial connection does not function as expected, verify the port communications parameters in the NET-PATH database match those of the attached host device, and that the proper cable is installed.

NET-PATH Test Outgoing

Create a fixed event that the NET-PATH can detect and report. This event must be defined in the database that the Polling and Analysis Center downloads.

- 1 When the NET-PATH places the call, the Off-Hook indicator should display OH:Y.
- 2 When the NET-PATH terminates the call, the Off-Hook indicator displays OH:N.
- 3 Confirm with the Polling and Analysis Center that they received the event. Additional configuration may be required at the Center before the received data displays properly, but the Center should be able to confirm delivery of the alarm.
- 4 If the Center does not receive the call, consult "Troubleshooting", page 4-11.

Storage/Relocation

To store or relocate the NET-PATH, unplug the commercial power and perform a Shutdown procedure. See "Shutdown" on page 4-10.



Notes



3

Operation

General

The NET-PATH has four distinct software components: the Loader, Operating System (OS), Application (App), and Database. These components are contained in non-volatile flash memory and share a common file system. The following figure shows these components.

Loader
Operating System
File System
Application

Figure 3-1. Flash Memory Software Components

Flash memory storage capacity is 32 MB. The flash memory is non-volatile, which means it retains the data when the power is off. The NET-PATH maintains a second file system in SDRAM. This file system is used for general data storage. It retains stored data only as long as commercial power or battery backup is available. SDRAM is 128 MB.

The loader boots the NET-PATH and loads an application or Operating System (OS) into SDRAM for execution. The OS software loads when the system does not have a valid application. The OS controls all of the functions required to permit users access to the NET-PATH and program it with an application and a database.

The application contains all operating software for the NET-PATH features. A license key controls the enabled features. The application software requires a database. If the application is loaded and no database is present, the NET-PATH uses a default database. An NET-PATH that is in the default state (no application or no database) offers the OS functions that enable the user to contact the unit and download the application and/or database.

The database contains all of the configuration parameters, programmed by the user. When the NET-PATH ships from the factory, it contains the operating system, application program, and a default database. The default database provides many basic power-on parameters used during the installation. The default database parameters include, but are not limited to:

- Host 1 and Host 2 are set to 9600, 8, N, 1. All others are disabled
- physical sensors input not enabled
- modem configured to auto-answer (North American modems only)

These parameters remain active until a new database downloads to the NET-PATH.



The NET-PATH can operate for two hours after primary power fails. Power loss that exceeds the internal UPS capacity results in the NET-PATH performing an orderly shutdown. Data stored in Flash memory is unaffected by a power loss. Data stored in SDRAM is lost when the NET-PATH shuts down after the UPS battery depletes. When the power restores, the processor checks the memory and reboots the unit. This initializes all hardware but does not affect the data stored in Flash memory. This includes the user database. You can program internal NET-PATH fixed events to signal power loss, power return, or an orderly shutdown. These fixed events allow the user to intervene and retrieve data stored in SDRAM, preventing data loss.

Interactive Command Mode

You can communicate with the NET-PATH through the internal modem, a serial port, or via Telnet. All modes offer access to the NET-PATH Command Line Interface that allows a technician to examine status and control several NET-PATH functions.

Use any unassigned port to establish communication with the NET-PATH Command Line Interface. You must enter a user name and password to gain access. Your system administrator can provide you with a login and password. To access the command line on the NET-PATH, use one of the following methods:

- Use a third-party terminal program to connect (via null modem cable) to a serial port on the NET-PATH.
- Use a third-party terminal program to connect to the NET-PATH via modem.
- Use a third-party telnet client to connect to the NET-PATH via the network.
- Use IRISnGEN Remote Agent Manager to establish a dial-up connection and go transparent to the NET-PATH.
- Use IRISnGEN Remote Agent Manager to establish a Telnet connection and go transparent to the NET-PATH.

Connecting to the NET-PATH Serial Port

To connect to the NET-PATH serial port

- 1 Use a null modem cable to connect a serial port on the NET-PATH to a serial port on your laptop or PC.
- 2 Using a terminal program such as ProComm or HyperTerminal, connect the COM port you are using on your computer to the NET-PATH. Verify that the port settings for the baud rate, parity, data bits, and stop bits correspond to the port settings on the NET-PATH. Default settings for the NET-PATH ports are 9600, 8-N-1.



Note You cannot use a NET-PATH port for local communications if that port is assigned to monitor a host device!

- 3 Type login and then press the **Enter** key.
The *User name:* prompt displays.
- 4 Type your user name and then press the **Enter** key.
The *Password:* prompt displays.
- 5 Type your password and then press the **Enter** key.
- 6 If the user name and password you enter are correct, the *NET-PATH>* prompt displays, indicating a successful logon to the NET-PATH.



Connecting to the NET-PATH via Modem

To connect to the NET-PATH using a modem

- 1 Using a terminal program, such as ProComm or HyperTerminal, configure the modem on your laptop or PC to dial the telephone number for NET-PATH's internal modem.
- 2 When you successfully establish a connection to the NET-PATH, type login; then, press the **Enter** key.
The *User name:* prompt displays.
- 3 Type your user name; then, press **Enter**.
The *Password:* prompt displays.
- 4 Type your password; then, press the **Enter** key.
- 5 If the user name and password you enter are correct, the *NET-PATH>* prompt displays indicating a successful logon to the NET-PATH.

Connecting to the NET-PATH via the Network

To connect a network capable NET-PATH using the network

- 1 Launch your preferred Telnet client and connect to the IP address for the NET-PATH. You may need to contact your Polling and Analysis Center to obtain the IP address.



Note You must load a valid database in the NET-PATH for it to have an IP address.

- 2 When you establish the connection, the Telnet Client window displays "Teltronics, Inc.," along with the version number for the application currently running on the NET-PATH.
- 3 Type login; then, press the **Enter** key.
The *User name:* prompt displays.
- 4 Type your user name; then, press the **Enter** key.
The *Password:* prompt displays
- 5 Type your password; then, press **Enter**.
- 6 If the user name and password you enter are correct, the *NET-PATH>* prompt displays, indicating successful logon to the NET-PATH.

Using the Remote Agent Manager to Establish a Dial-Up Connection

To establish a dial-up connection using Remote Agent Manager

- 1 In the IRISnGEN tree view, browse to the NET-PATH with which you wish to communicate. Select the NET-PATH by right-clicking it. From the pop-up menu, select **Remote Agent Manager**.
- 2 When the Remote Agent Manager screen finishes loading, select the telephone icon from the toolbar. This prompts a drop-down list that displays the methods you can use to connect to the NET-PATH. You can connect via a modem or the network. For each connection option, the connection information is shown. The Modem option displays the telephone number; the Network option displays the IP address.
- 3 For a dial-up connection, select the Modem option. IRISnGEN will select (by default) the first available dial-out modem and dial the NET-PATH.
- 4 When the Remote Agent Manager reports that it has connected successfully, select the remote agent and press (Transparency). Remote Agent Manager will



log you into the NET-PATH using the Remote Agent username and password. The *NET-PATH>* prompt will display when the transparency session becomes active.

- 5 Alternately, once you establish a dial-up connection, you can simply select a desired host and press the Transparency button to go directly transparent with that host.

Using the Remote Agent Manager to Establish a Network Connection

- 1 In the IRISnGEN tree view, browse to the NET-PATH with which you wish to communicate.
- 2 Select the NET-PATH by right-clicking the icon. From the pop-up menu, select **Remote Agent Manager**.
- 3 When the RA Manager screen finishes loading, select the telephone icon from the toolbar. This accesses a drop-down list that displays the methods you can use to connect to the NET-PATH. You can connect via the modem or via the network. For each connection option, the connection Information is shown. The modem option displays the telephone number, and the network option displays the IP address.
- 4 For a network connection, select the Network option. IRISnGEN will establish a Telnet connection with the NET-PATH.
- 5 Once you establish the Telnet connection, you can press the Transparency button. You are then logged in using your IRISnGEN user name and password. The NET-PATH prompt appears.



Useful Command Line Interface Commands

Once you establish a command line connection, many commands are available to communicate with the NET-PATH and the monitored hosts. Your access to these commands depends on your security authorization level (user name and password). Some of these commands can have a harmful effect on the NET-PATH. Do not execute a command unless you are fully aware of its impact.

To obtain a list of commands, type **help** at the command line as shown below.

```
NET-PATH> help
```

The table below shows the NET-PATH commands, their description, and syntax examples. The brackets ([]) indicate optional operands. You can use standard wildcards, such as * and ?.

Table 3-1: NET-PATH Commands

Command	Syntax and Examples	Description
BATTERYTEST	BATTERYTEST <i>Option</i> Example: BATTERYTEST START BATTERYTEST STOP	Performs a battery load test. <i>Option:</i> START/STOP
BEEP	BEEP <i>Option</i> Example: BEEP ENABLED BEEP DISABLED	Enables or disables the buzzer. <i>Option:</i> ENABLED/ DISABLED
CD	CD <i>Directory</i> Examples: CD TEMP CD \FLASH\TEST	Changes the current directory. Cannot change from a directory in one media (e.g. FLASH) to a directory in the other media (e.g. RAM) with one CD command.
CHECKDISK	CHECKDISK <i>Drive</i> Example: CHECKDISK \FLASH CHECKDISK \RAM	Checks a drive for errors. <i>Drive</i> = FLASH or RAM
CLEANDISK	CLEANDISK <i>Drive</i> Example: CLEANDISK \FLASH	Forces a complete cleaning and reclaiming of dirty sectors on the disk. <i>Drive</i> = FLASH
COPY	COPY <i>SrcFile1</i> [<i>SrcFile...n</i>] <i>DestLocation</i> Examples: COPY *.DAT *.BAK COPY LOG.DAT USER\LOG1.DAT COPY LOG1.DAT LOG2.DAT \Flash\logs\ <i>SrcFile</i> = original file <i>DestLocation</i> = destination location	Copies one or more files from one location to another. To copy multiple files to a directory, the second parameter must be a directory name ended with a backslash (\); otherwise, the files concatenate to one file. <i>SrcFile</i> = original file <i>DestLocation</i> = destination location



Table 3-1: NET-PATH Commands

<p>CYCLEPOWER</p>	<p>CYCLEPOWER MODEM <i>Cycletime</i> [<i>DeviceAddress</i>]</p> <p>Example:</p> <p>CYCLEPOWER MODEM 4 1</p> <p>CYCLEPOWER MODEM 4 2</p> <p>CYCLEPOWER MODEM 4</p>	<p>Cycles power on a modem.</p> <p><i>Cycletime</i> = in seconds</p> <p><i>DeviceAddress</i> = Modem Instance</p> <p>Note:</p> <p>The <i>DeviceAddress</i> is only used to distinguish between multiple modems. Therefore, you can set this value to either 1 or 2 (mapping to AUX1 or AUX2). You can also specify the instance/name. If no instance/name is specified and there is only one modem, the modem instance will default to 2. If more than one modem is on the NET-PATH, the user is presented with modem instances and names as follows:</p> <p>There is more than one modem configured. Please specify the modem instance or name.</p> <p><i>1 Main Modem</i></p> <p><i>2 Secondary Modem</i></p> <p>If you specify any device other than MODEM, an error is returned.</p> <p>When entering strings (e.g. Modem Name) surrounding quotes are not required. However, when a name contains spaces, the quotes are required.</p>
<p>DATE</p>	<p>Date [<i>MM-DD-YYYY</i>]</p> <p>Examples:</p> <p>DATE 12-05-2003</p> <p>DATE</p>	<p>Sets and /or retrieves the date. If you do not specify a date, the current date is returned. The format depends on the local format specified in the Personality Module.</p>
<p>DATETIME</p>	<p>DATETIME [<i>MM-DD-YYYY HH:MM:SS</i>]</p> <p>Examples:</p> <p>DATETIME 12-05-2003 11:12:00</p> <p>DATETIME</p>	<p>Sets and/or gets the date and time. You do not specify a date and time, the current date and time is returned. The format depends on the local format specified in the Personality Module.</p>



Table 3-1: NET-PATH Commands

<p>DEBUG</p>	<p>DEBUG [Type] [Head=xxx] [Tail=xxx] [Clear] [Comm] [Show] [Set=opt1,opt2...optn]</p> <p>Examples:</p> <p>DEBUG SET=ACT, MOD, MAT</p> <p>DEBUG SHOW</p> <p>Returned:</p> <p>ACT MAT MOD</p>	<p>Debug Information will be stored to the DEBUG.DAT (128Kb) file.</p> <p><i>Type</i> = displays contents of the Debug File. <i>Head=xxx</i> = displays the first xxx bytes of the Debug File. <i>Tail=xxx</i> = displays the last xxx bytes of the Debug File. <i>Clear</i> = clears the contents of the Debug File. <i>Comm</i> = enables debugging via the access port (serial, NIC, modem). <i>Show</i> = displays the current Debug Options. <i>SET=x,y,z</i> = changes the Debug Options and persist it to the PM.</p> <p>SET options:</p> <p>ALL - All NONE - None LOG - Log to the DEBUG.DAT ACT - Action ACW - Action Window APP - Application CLH - Command Handler CMS - Command Session CON - Contact COR - Correlation DBM - Database Manager DET - Event Detect DVM - Device Manager ERR - General Error EVE - Event EXP - Expect EXS - Expression FAX - Fax FIL - Filter FIX - Fix Event FLM - File Manager HLT - High Level Thread MAT - Event Match MOD - Modem NIC - Network PPP - Point to Point Protocol PRT - Protocol PY - Python REL - Relay SER - Serial Port SCH - Scheduler SCR - Script SNM - SNMP THE - Threshold</p>
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Table 3-1: NET-PATH Commands

<p>DEFAULTNETWORK</p>	<p>DEFAULTNETWORK [IPAddress] [Gateway] [SubnetMask]</p> <p>Examples:</p> <p>DEFAULTNETWORK 172.16.2.226</p> <p>DEFAULTNETWORK</p> <p>The second example returns the following:</p> <p>DEFAULT IP ADDRESS: 172.16.3.226</p> <p>DEFAULT GATEWAY: 172.16.3.1</p> <p>DEFAULT SUBNET MASK: 255.255.255.0</p>	<p>Display or change the default network settings for the NET-PATH device. This includes the IP address, gateway, and subnet mask.</p>
<p>DEL</p>	<p>DEL <i>FileSpecification</i></p> <p>Example:</p> <p>DEL *.DAT</p>	<p>Deletes one or more files.</p>
<p>DEVICES</p>	<p>DEVICES [Type]</p> <p>Examples:</p> <p>DEVICES</p> <p>DEVICES SERIAL</p>	<p>Gets a list of configured devices. If you do not specify a device type, all devices are listed.</p> <p><i>options:</i></p> <p>BATTERY, POWER, VOLTAGE, MEMORY, MODEM, NIC, SERIAL, SYSTEM, UI</p>
<p>DIR</p>	<p>DIR [Path] [-s]</p> <p>Examples:</p> <p>DIR</p> <p>DIR \FLASH\TEST -s</p> <p>DIR -s</p>	<p>Gets the directory structure. If you do not specify a path, the current directory is used.</p> <p><i>Path</i> = specified path for directory structure.</p> <p>-s = displays files in specified directory and all subdirectories.</p>
<p>DISABLE</p>	<p>DISABLE [DeviceName]</p> <p>Examples:</p> <p>DISABLE SERIAL1</p>	<p>Disables a serial port.</p> <p><i>DeviceName</i> = name of the NET-PATH's serial port.</p>
<p>DISPLAYNAME</p>	<p>DISPLAYNAME [CompanyName] [ProductName]</p> <p>Examples:</p> <p>DISPLAYNAME</p> <p>returns the following:</p> <p>COMPANY NAME: XYZ CORP.</p> <p>PRODUCTNAME: NET-PATH</p>	<p>Display or change the company name and product information.</p> <p><i>CompanyName</i> = the customer's company name</p> <p><i>ProductName</i> = user-defined product description</p>



Table 3-1: NET-PATH Commands

DPOLL	<p>DPOLL [-r] <i>MEDIA:media</i> [<i>TYPE:FileType</i>] [<i>HOST:HostName</i>] [<i>LAYOUT:LayoutName</i>]</p> <p>Examples:</p> <p>DPOLL MEDIA:FLASH HOST:"My Host 1"</p> <p>DPOLL MEDIA:RAM TYPE:Binary HOST:MyHost</p> <p>DPOLL MEDIA:RAM HOST:"My Host" LAYOUT:"Text"</p>	<p>Destructive poll. Displays the results of the poll on the screen. TYPE, HOST and LAYOUT specifications are optional.</p> <p><i>Media</i> = FLASH or RAM</p> <p><i>FileType</i> = name of file that controls maximum file size and file handling</p> <p><i>HostName</i> = host attached to NET-PATH</p> <p><i>Layout</i> = name of called layout that specifies the format of the record</p> <p>Note: When entering strings (for example, <i>HostName</i>), surrounding quotes are not required. However, when a name contains spaces, the quotes are required.</p> <p>Asterisk (*) in place of the host name denotes polling of shared data as opposed to a specific host.</p>
ENABLE	<p>ENABLE <i>DeviceName</i></p> <p>Example:</p> <p>ENABLE SERIAL1</p>	<p>Enables a serial port.</p>
ENGINE	<p>ENGINE [<i>Host</i>] [<i>Action</i>] [<i>Summary</i>] [<i>Noevent</i>] [<i>Full</i>]</p> <p>Example:</p> <p>ENGINE HOST</p>	<p>Used to give a snapshot of the active components in the Event pipeline.</p> <p><i>Host</i> = displays only host-related engine information</p> <p><i>Action</i> = displays only action-related engine information</p> <p><i>Summary</i> = displays information in a summary format</p> <p><i>Noevent</i> = does not display any event information</p> <p><i>Full</i> = displays all event variables</p>
FORMAT	<p>FORMAT \FLASH</p>	<p>Formats a FLASH drive.</p>
GETPM*	<p>GETPM</p>	<p>Gets the Personality Module.</p>
GREP	<p>GREP [-i] [-r] <i>FileSpec RegExpr</i> [<i>FileName</i>]</p> <p>Example:</p> <p>GREP *.TXT "DST [9]+[\t]* City" RESULTS.GRP</p> <p>GREP *.LOG ERROR</p> <p>This example finds all occurrences in all files ending with .LOG (in the current directory) of the string "Error" regardless of case (i.e., error, Error, ERROR)</p> <p>GREP -r *.LOG ERROR</p> <p>This example finds all occurrences in all files ending in .LOG (in the current directory) and below the string "Error" regardless of case.</p>	<p>Searches for a string in a file(s) and places the results in the file you specify. If you do not specify a file name, the results display on screen.</p> <p><i>-i</i> = not case sensitive</p> <p><i>-r</i> = grep recursive</p> <p><i>FileSpec</i> = name of file to search</p> <p><i>RegExpr</i> = string to search</p> <p><i>FileName</i> = name of output file</p>



Table 3-1: NET-PATH Commands

HELP	<p>HELP <i>[Command]</i></p> <p>Examples:</p> <p>HELP DPOLL</p> <p>HELP</p> <p>HELP PINGHOST</p>	<p>Displays help for all the commands or for a specific command. If you do not specify a command, a list of all available commands displays.</p>
LOG	<p>LOG <i>[-r] [-x] DeviceType DeviceName [SearchString]</i></p> <p>Examples:</p> <p>LOG -r SERIAL "Serial 1"</p> <p>LOG -r SERIAL "Serial 1" "ERR225 1 0"</p>	<p>Used to view, clear, or search log files.</p> <p>-r = reads the log (nondestructive) and searches records using the specified search string as a regular expression</p> <p>-x = reads the log (destructive, i.e., clears the log) and searches records using the specified search string</p> <p><i>DeviceType</i> = any device with logging capabilities, such as serial or modem</p> <p><i>DeviceName</i> = name of the device that we are logging</p> <p><i>SearchString</i> = the search parameters for logging</p> <p>Note When entering strings—for example, <i>DeviceName</i>—surrounding quotes are not required. When a name contains spaces, the quotes are required.</p>
LOGIN	<p>LOGIN</p> <p>Examples:</p> <p>LOGIN</p> <p>returns the following:</p> <p>USERNAME: <enter user ID></p> <p>PASSWORD: <enter your password></p>	<p>Begins a new interactive session with the NET-PATH.</p>
LOGOUT	<p>LOGOUT</p>	<p>Terminates a session.</p>
MD	<p>MD <i>Directory</i></p> <p>Example:</p> <p>MD \TEMP\MyDirectory</p>	<p>Makes a new directory.</p> <p><i>Directory</i> = name of new directory</p> <p>Note The directory name cannot include spaces.</p>
MEDIA	<p>MEDIA <i>Media</i></p> <p>Examples:</p> <p>MEDIA FLASH</p> <p>MEDIA RAM</p>	<p>Change the current media or list all the available media. If you do not specify media, all available media displays.</p> <p><i>Media</i> = FLASH or RAM</p>
MODEM*	<p>Modem <i>ModemName</i></p> <p>Examples:</p> <p>MODEM MODEM</p>	<p>Initiate a transparency session to a modem. Modem is the default name of the NET-PATH modem and seldom changes.</p>



Table 3-1: NET-PATH Commands

MODEMCOUNTRY	MODEMCOUNTRY <i>PhysicalInstance EnumCode</i> Examples: MODEMCOUNTRY 2 4 MODEMCOUNTRY 2 5	Sets the Country Code for the modem. This command only works with international modems. <i>PhysicalInstance</i> = 1 or 2 <i>EnumCode</i> = Country Code for the Modem: 1-33. See Table 4-1 and Table 4-2. Note: When changing the country code using the MODEMCOUNTRY command, the remote agent will not display on its LCD the * (asterisk) character next to the country code you selected until you reboot the remote agent.
MOVE	MOVE <i>FileSpec DirSpec</i> Example: MOVE "File1" "Temp Dir"	Moves files. <i>FileSpec</i> = original file to move <i>DirSpec</i> = final location of file
NDPOLL	NDPOLL <i>MEDIA:Media TYPE:FileType HOST: HostName [LAYOUT:LayoutName]</i> Examples: NDPOLL MEDIA:FLASH TYPE: IRISnGEN HOST:MyHost NDPOLL MEDIA:RAM TYPE HOST:*LAYOUT: "IRISnGEN Polling Layout"	Non-destructive poll. Displays the results of the poll on the screen. <i>Media</i> = FLASH or RAM <i>FileType</i> = name of file that controls maximum file size and file handling <i>HostName</i> = name of host attached to NET-PATH <i>Layout</i> = name of called layout that specifies the format of the record Note: When entering strings—for example, <i>HostName</i> —surrounding quotes are not required. However, when a name contains spaces, the quotes are required. Asterisk (*) in place of the host name denotes polling of shared data as opposed to a specific host.
PINGHOST	PINGHOST <i>HostName Count Delay</i> Example: PINGHOST "MyHost" 3 30	Pings a specified Host. <i>HostName</i> = name of host attached to the remote agent <i>Count</i> = number of ping requests to send <i>Delay</i> = timeout to wait for each reply Note: When entering strings surrounding quotes are not required. When a name contains spaces, quotes are required.
PINGIP	PINGIP <i>IPAddress Count Delay</i> Example: PINGIP 172.16.3.24 3 30	Pings a specified IP address. <i>IPAddress</i> = the IP address of a device on your network <i>Count</i> = number of ping requests to send <i>Delay</i> = timeout to wait for each reply
PROMPT*	PROMPT <i>PromptText</i> Example: PROMPT NET-PATH	Change the command line prompt. <i>PromptText</i> = the text that displays on the remote agent's command line



Table 3-1: NET-PATH Commands

PWD	PWD	Gets the current working directory. A current directory is maintained for each drive.
RAW	RAW <i>SerialPortName Direction</i> Example: RAW "Serial 2" OUT	The RAW command displays on the screen the contents of the raw data buffer. <i>SerialPortName</i> = name of NET-PATH serial ports (1-8) <i>Direction</i> = IN or OUT
RD	RD <i>Directory</i> Example: RD \FLASH\Users\Jones	Removes an existing directory. <i>Directory</i> = name of directory to remove
REBOOT	REBOOT	Forces the NET-PATH to reboot.
RELAY	RELAY <i>RelayName State</i> Example: RELAY "Relay 2" ACTIVATE	Activates or deactivates a relay. <i>RelayName</i> = actual device name of the relay as defined on the Devices and Host tab in the Remote Agent record <i>State</i> = ACTIVATE, DEACTIVATE, or TOGGLE
RENAME	RENAME <i>OldFileName NewFileName</i> Example: RENAME "OldName" "NewName"	Renames a file. <i>OldFileName</i> = original file name <i>NewFileName</i> = target file name When entering strings, surrounding quotes are not required. However, when a name contains spaces, the quotes are required.
RLOGINIP	RLOGINIP <i>IPAddress ServerUsername ClientUsername Port TerminalType/Speed</i> Example: RLOGINIP 172.16.3.24 XYZServer XYZClient 513 TTY/ 9600	Establish an RLOGIN session using the target host's IP address. <i>IPAddress</i> = the targeted address of the remote device Note: The IP address is a required parameter. <i>ServerUsername</i> = the name that the server uses to execute the command on the server <i>ClientUsername</i> = user name that requests the RLOGIN session <i>Port</i> = the port number that is dedicated to RLOGIN communications. The default value is 513. <i>TerminalType/Speed</i> = the terminal type or speed used
RLOGINHOST	RLOGINHOST <i>HostName</i> Example: RLOGINHOST XYXHost	Establish an RLOGIN session using the target host name <i>HostName</i> = the name of the target host device
RUN*	RUN <i>ScriptName</i> Examples: RUN "MyScript"	Executes a Python automation script that is contained in RAM or FLASH memory.



Table 3-1: NET-PATH Commands

SCHEDULER	<p>SCHEDULER <i>[START \ STOP \ HOSTNAME]</i></p> <p>Examples:</p> <p>SCHEDULER START</p> <p>SCHEDULER STOP</p> <p>SCHEDULER</p> <p>SCHEDULER "My Host"</p>	<p>Starts, stops, or views scheduled tasks that are defined in the database. If no options are present, all scheduled tasks display. If a host name is given, only tasks for that host display. If a command is given, it is sent to the scheduler.</p> <p><i>START</i> = start the scheduler</p> <p><i>STOP</i> = stop the scheduler</p> <p><i>HOSTNAME</i> = lists scheduled tasks for the specified host.</p>
SCRIPT	<p>SCRIPT <i>[HostName] [Options [detail]] [ScriptParm]</i></p> <p>Example:</p> <p>SCRIPT "424pt1" KILL</p> <p>The example above kills the script currently active on the 424pt1 host.</p> <p>Example:</p> <p>SCRIPT "Meridian PBX" GRACEFUL 5000</p> <p>The example above gives the currently active script on the Meridian PBX host five seconds to exit before killing it.</p> <p>Example:</p> <p>SCRIPT "Meridian PBX" QUEUE "FTP PUSH" DEBUG</p> <p>The example above starts the FTP PUSH script in DEBUG mode.</p>	<p>Gets the status of scripts.</p> <p><i>HostName</i> = name of host attached to the remote agent</p> <p><i>Options:</i></p> <p>KILL - Stops the currently running script on the specified host</p> <p>SUSPEND- Suspend the queue for the specified host; do not add any new scripts to it, and do not remove scripts from the queue.</p> <p>GRACEFUL [ms]- Takes an additional argument of time in milliseconds. Issue a graceful stop to the script. If it does not respond within the time given, kill it.</p> <p>RESUME -Resume normal queue operation from the point at which it was suspended.</p> <p>QUEUE [script name] -Takes an additional argument of script name. Adds the specified script to the queue for the specified host.</p> <p>FLUSH - Flush all pending scripts from the queue for the specified host.</p> <p>You can specify all command options by using the first letter of the command.</p> <p><i>detail</i> = the specific parameters for the selected option</p> <p><i>ScriptParm</i> = any parameter supported by the script. Refer to your script release notes</p>
SETPM*	<p>SETPM <i>VariableName NewValue</i></p> <p>Examples:</p> <p>SETPM MYPRODUCT TELTRONICS</p> <p>Returns the following:</p> <p>PM VARIABLE 'MYPRODUCT' set to 'TELTRONICS'</p>	<p>Sets a Personality Module variable.</p>
STATUS	<p>STATUS <i>[Device]</i></p> <p>Examples:</p> <p>STATUS</p> <p>STATUS Serial</p>	<p>Requests that the NET-PATH return information about the specified device. If you do not specify a device, the status for all devices displays.</p>



Table 3-1: NET-PATH Commands

TELNETHOST	TELNETHOST <i>HostName</i> [<i>Port</i>] Examples: TELNETHOST "MyHost" TELNETHOST "MyHost" 23	Telnet to specified host. This command does not function from a non-protocol telnet session (i.e., a session outside of RA Manager). <i>HostName</i> = name of host attached to the remote agent <i>Port</i> = a TCP port
TELNETIP	TELNETIP <i>IPAddress</i> [<i>Port</i>] Examples: TELNETIP 172.16.3.24 TELNETIP 172.16.3.24 23	Telnet to specified IP Address. This command does not function from a non-protocol telnet session (i.e., a session outside of RA Manager). <i>IPAddress</i> = the IP address of a device on your network <i>Port</i> = a TCP port. The default is 23
TERMINATE	TERMINATE	Closes all command line interface sessions and / or disconnects modem or network connections.
TIME	TIME [<i>HH:MM:SS</i>] Examples: TIME TIME 14:02:00	Sets / gets the current time. If you do not specify time, the current time is retrieved.
TYPE	TYPE <i>filename</i> Examples: TYPE MyFile	Brings the specified file content to the screen for viewing.
XPAR	XPAR [<i>hostname</i>] Examples: XPAR XPAR "My Host" XPAR -b	Initiates a transparent serial connection to an attached host. If you do not specify a host name, and there is more than one host available, a menu displays all possible host names, but not the system host name (remote agent). The user may then select the desired host from this menu. If there is only one available host, the transparent session starts. Exiting the transparent session returns you to the command line prompt. Use the -b (binary) option to prevent exiting from transparency using an escape sequence. You must disconnect manually (hang up) to exit transparency. This option is most helpful when backing up and restoring binary data.



Table 3-1: NET-PATH Commands

XPARA	<p>XPARA <i>[hostname]</i></p> <p>Examples:</p> <p>XPARA</p> <p>XPARA "My Host"</p>	<p>Initiates an active transparency to a host. When a user issues a command, an enumerated list of the serial hosts accessible to the current user displays. If only one serial host is accessible to the user, an active bridge transparency session immediately initiates for that host.</p> <p>Once a session is established, the system sends any characters received from the host to the connected user and also passes them to the application (or script) for processing. Characters, sent from the port via a terminal action or script, are sent to the host, but not to the connected user (unless the host is echoing characters). Any characters sent by the user are sent directly to the host port.</p> <p>A user can terminate a command line active bridge transparency session using the same escape characters that are used to terminate standard transparency (CTRL-A). Terminating the transparency session this way returns the user to the remote agent command prompt.</p>
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* This command is only available to Teltronics personnel.

A user access group assigned to a user profile controls access to commands. Some commands listed in the table above are only available to users who enter the master access password or the Teltronics factory password.



Note



4

Indicators and Diagnostics

Front Panel Indicators

The NET-PATH front panel contains a Liquid Crystal Display (LCD), four navigation buttons (marked with arrows indicating Up, Right, Left, and Down), and four Light Emitting Diode (LED) indicators. The LCD can display four lines, up to twenty characters each. Software or the four navigation buttons control the display. The four LEDs indicate the power status, battery charge status, application or database status, and alarm conditions.



Figure 4-1 NET-PATH Front Panel Indicators

Console Connector

Use to establish a local command line communication interface with the remote agent. **Feature not available in this release.**

Indicators

The four LED indicators on the NET-PATH front panel indicate the following conditions.

LED	Description
Power	ON indicates the NET-PATH is using commercial power. Off indicates the NET-PATH is operating on battery power.
Battery	ON indicates the battery is fully charged. FLASHING, indicates the battery is charging. OFF, indicates the battery is disconnected.
Status	FLASHING indicates the NET-PATH is loading the application and database. ON indicates the NET-PATH has a valid database loaded. OFF indicates the NET-PATH does not have a valid application or database loaded.
Alarm	ON indicates that an alarm condition exists. OFF indicates normal operation



LCD Display

The LCD displays four lines that can contain up to twenty characters each. Due to the display area's limitations, the LCD acts as a view port into the information it displays. Use the arrow buttons to select options, and then scroll left, right, up and down through the display information. You can view the entire information collection similar to turning the pages of a notebook.

Display Content

The following figure shows the information types that display on the LCD screen along with their navigation sequence.

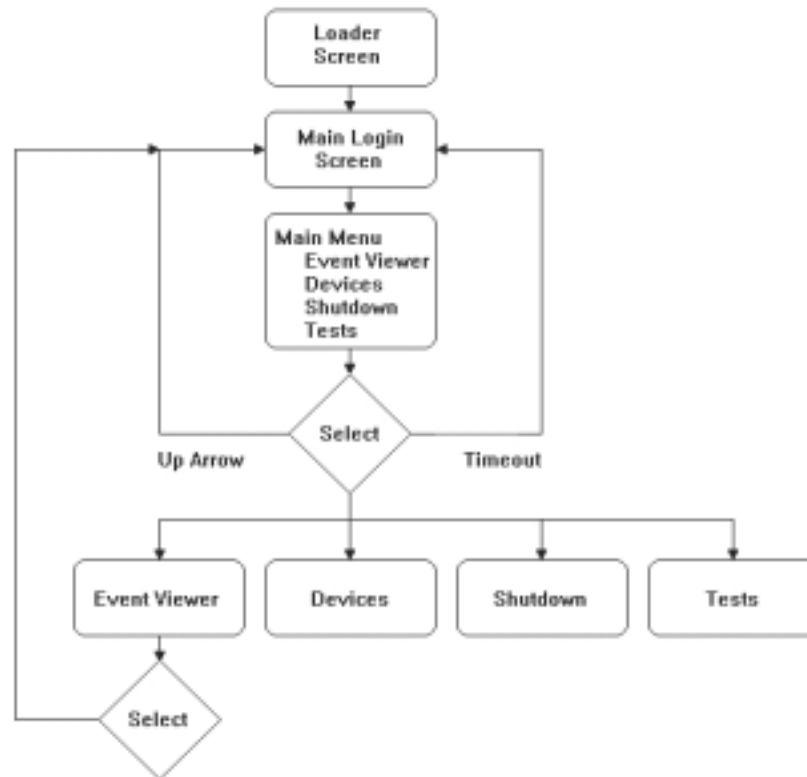


Figure 4-2 LCD Display Content and Navigation Sequence

Boot Sequence

The LCD and display indicators show the progress during the NET-PATH's defined boot process.

The usual boot sequence is as follows:

- 1 The operating system name displays.
- 2 The unit performs a self-check and displays the status of the operating system and application by indicating OK or BAD. During this period, the Status LED flashes.
- 3 The next display indicates whether the OS (operating system) or the application will launch. When the application is OK, it launches; otherwise, the OS launches.
- 4 The word "Uncomp" displays, indicating that the launched software is uncompressed. When successful, it displays OK.
- 5 A Cyclic Redundancy Check (CRC) executes with the launched software to determine if it is valid.
- 6 If the CRC is OK, the NET-PATH continues to load and displays *Init1* and *Init 2*. The Status LED stops flashing and is not illuminated.



- 7 A banner screen appears, as shown in Figure 4-4. The database device library names appear on the bottom of the LCD display as each one loads. The PUN number and OH: Y/N appears. The Status LED will illuminate if an application and database are present. Figure 4-3 illustrates a typical LCD display during the boot process.



Figure 4-3 LCD Boot Process Display

Main Log-in Screen

When the application boots, the main screen displays.

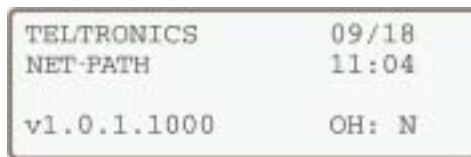


Figure 4-4 Main Login Screen

The first line displays a banner, which includes “Teltronics” and the date. The banner, defined in the NET-PATH Personality Prom, contains twenty character spaces, with the last five reserved for the date.

The second line contains the NET-PATH application version and the time in twenty-four hour format. The fourth line displays the PUN version number when the application finishes loading. The modem status displays in the bottom-right corner. OH is an abbreviation for Off Hook; Y= yes, N= no.

Login Procedure

Press the right arrow key to enter the system menu. When the NET-PATH security feature is enabled, the LCD display prompts you to enter a key sequence using the four buttons. This security sequence must be four single-button keystrokes. If you previously logged into the security system (and did not log out), or the system logged you out via a non-activity timeout, you will be able to re-enter the main menu.

Navigation

Use the four arrow buttons to navigate the user interface.



- ◀ Scroll left, or return to the previous LCD display.
- ▲ Scrolls up.
- ▼ Scrolls down.
- ▶ Scroll right or select an item to display or perform an action.



Menu Options

The main menu offers choices for Event Viewer, Devices, Shut Down, and Tests. While in the menu system, the NET-PATH times out when it detects no activity for one minute. The system automatically logs you out and returns to the main screen. Figure 4-5 shows the LCD display after pressing the Right arrow navigation button.



Figure 4-5 NET-PATH Main Menu

From the main menu, navigate using the four arrow navigation buttons located to the right of the LCD display. The menu selection cursor (>) tells the system which item to select when you press the right arrow button. When a menu contains more lines than the LCD can display, the scroll cursor indicator (v) appears at the bottom left. Push the up or down arrow buttons to scroll through the display.

Event Viewer

Event Viewer data is only available when utilizing LCD actions. Select Event Viewer to display information resulting from an LCD action. The following screen appears.

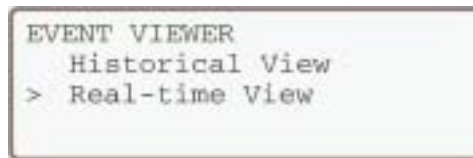


Figure 4-6 Event Viewer Display

Event Viewer data is only available when using LCD actions. Select Historical View to display the last fifty LCD actions, in order by date. The most current LCD action appears at the top of the list. Choose the Real Time View to display LCD actions as they occur.

Devices Menu Option

The Main Menu's Device option contains sub-menus for the different devices in the NET-PATH. These sub-menus are:

- Alarm LED
- Buzzer
- Contact Sensors
- Modems
- Relays
- Serial Ports
- Temp. Sensors

Some devices display information only, while others allow interaction with the device to change its status.

Alarm LED

Select the Alarm LED to turn off the Alarm LED indicator on the NET-PATH.



Battery

Select the Battery device option to automatically record a new battery installation date. This date is then stored until the NET-PATH Battery function is executed again.

Caution: Use this function **only** when replacing the NET-PATH battery.

Buzzer

The Buzzer device option lets you to turn off the audible click. Software controls the buzzer function.

Contact Sensors

The Contact Sensors device option includes a summary view of all sensors, as well as information about specific contact sensors. The screen below illustrates the contact sensors summary status display.

```
CONTACT SUMMARY
 12345678
Cfg 00000000
Act X
```

Figure 4-7 Contact Sensor Summary Display

The sensors, which are numbered 1 through 16, display on the top line. These contact sensor numbers appear only when they are defined in the NET-PATH database. The **Cfg** line indicates the sensor's configuration – **O** when the sensor is set as normally open, or a **C** when the sensor is set as normally closed. The **Act** line indicates activity, based on the contact's normal state. If the contact sensor is normally open and the switch is closed, the **Act** line displays an X for the appropriate contact sensor.

DC Voltage

The DC Voltage device option produces a summary showing DC voltage in millivolts.

Modems

The Modems device option lets you cycle the power to the internal modem and change the country code for an international modem. For NET-PATH units that contain an international modem, you must specify the country code before the modem can function. After specifying the country code, cycle the modem power using the LCD menu.

```
MODEMS
> Cycle Modem Power
  Country Codes...
```

Figure 4-8 Modems Display

When you choose the Cycle Modem Power option, the LCD displays the modem power status. When the modem power is off, the LCD shows OH: Y for a few seconds, and when modem power returns, it displays OH: N.



International Modems

When installing the NET-PATH remote agent, you may need to adjust the modem's country code setting for Multi-Tech modems with model number MT5634SMI.

To display the country code currently in use:

Type "Status Modem" on the command line. The system returns the modem initialization string characters (shown below) in the Country Code field.

Table 4-1: Country Code Definitions for Multi-Tech Modem Model MT5634SMI

NET-PATH Country Code	Countries	Modem Initialization String
1	New Zealand	at%t19,0,9
2	Hong Kong Hungary India Indonesia Israel Malaysia Philippines Poland Singapore Slovenia South Korea Vietnam	at%t19,0,30
3	Czech Republic	at%t19,0,25
4	South Africa	at%t19,0,35
5	Argentina Aruba Austria Bahrain Belgium Brazil Brunei Canada Cayman Islands Chili China Columbia Costa Rica Denmark Equador Egypt Finland France Germany Greece Guatemala Iceland Ireland Italy	at%t19,0,34



Table 4-1: Country Code Definitions for Multi-Tech Modem Model MT5634SMI (Cont.)

NET-PATH Country Code	Countries	Modem Initialization String
5	Jamaica Luxemburg Macao Mexico Netherlands Netherlands Antilles Norway Pakistan Panama Peru Portugal Qatar United Arab Emirates (Dubai) United Kingdom United States Uruguay Venezuela Romania Russia Saudi Arabia Slovakia Spain Sri-Lanka Sweden Switzerland Trinidad Turkey Ukraine	at%t19,0,34
6	Japan	at%t19,0,10
7	Australia	at%t19,0,1



Note The modems in the NET-PATH are not manufactured by Teltronics. Tables 4-1 and 4-2 list the countries that are supported by the NET-PATH internal modem. The manufacturer has tested the modem to ensure that it complies with the appropriate specifications for the countries listed. The table does not indicate that the NET-PATH has been tested, certified or otherwise approved for installation and operation in the countries listed. Contact your Teltronics sales representative for information regarding the countries in which the NET-PATH has been certified and/or approved.

Universal Modems

When installing the NET-PATH remote agent, you may need to adjust the modem's country code setting for Multi-Tech modems with model number MT5656SMI.

1. Determine your modem type.

Do one of the following:

- Look at the model number on the bottom of your NET-PATH. If a "U" (Universal) appears in the sixth position, your NET-PATH has the Multi-Tech modem.
- Login to the NET-PATH command line and type the command "STATUS MODEM." A "modem enum" value of "0239" indicates your NET-PATH has the Multi-Tech modem.

2. Change the country code.

Login to the NET-PATH command line and type "STATUS MODEM." The modem returns a status modem response, shown below. Use the "MODEMCOUNTRY" command to modify the country code. Refer to Table 3-1 of the NET-PATH Installation and Operation Guide.

Table 4-2: Country Code Definitions for Multi-Tech Modem Model MT5656SMI

NET-PATH Country Code	Countries	Status Modem Response
1	Japan	0
2	Argentina	07
3	Australia	09
6	Brazil	16
17	Malaysia	6C
20	New Zealand	7E
24	Hong Kong India Indonesia	99
25	Singapore	9C
26	South Africa	9F
31	Israel Philippines Canada Chile China Mexico United States Korea-Republic Of Thailand	B5



Table 4-2: Country Code Definitions for Multi-Tech Modem Model MT5656SMI (Cont.)

NET-PATH Country Code	Countries	Status Modem Response
32	Hungary Poland Slovenia Czech Republic Austria Belgium Denmark Finland France Germany Greece Iceland Ireland Italy Luxembourg Netherlands Norway Portugal Russian Federation Slovakia Spain Sweden Switzerland Turkey United Kingdom Cyprus Liechtenstein Lithuania	FD
33	Taiwan	FE



Note When programming a Multi-Tech modem (model MT5656SMI) for international use, you must first download a NET-PATH 2.0 application (or higher) to your NET-PATH device. Failure to do so may cause the device to function improperly. Users programming a Multi-Tech modem (MT5656SMI) with the country code “31” do not need to download a NET-PATH 2.0 application first.

Relays

Select the Relays device option to toggle between the two NET-PATH relay outputs. Executing this option produces an audible click.

Serial Ports

The Serial Ports device option produces a summary view of all the NET-PATH serial ports. The screen below illustrates the serial ports summary display. The NET-PATH port numbers, presented as 1 through 8, A1, and A2, appear on the top line. Only the ports and auxiliary devices defined in the database appear in the summary. The summary also shows the control lead status for DTR, DSR, OH, CD, RTS, and CTS. A dash displays for any port not configured.

```
SER  PORTS SUMMARY
      12345678 A1 A2
      DTR
v    DSR
```

Figure 4-9 Serial Ports Summary Display

Temp Sensors

The Temp Sensors device option displays the internal and external temperatures when these sensors are present and defined in the NET-PATH database. Temperatures can display in Fahrenheit (F), Celsius (C) or Kelvin (K). The following illustrates a typical Temp Sensors summary display.

```
TEMP SUMMARY
      F    C    K
Ex: 104  040  313
IN: 122  050  323
```

Figure 4-10 Temperature Sensor Summary Display

Shutdown

The main menu Shutdown option includes Safe Shutdown, Warm Boot, and Cold Boot. The Warm Boot safely reboots the unit without cycling power. Cold Boot cycles power and reboots the unit.

Both warm and cold boots may result in the loss of active event data. Data stored in flash memory is retained.

Safe Shutdown functions only when commercial power is removed. When you attempt to shut down before removing the power, the following displays.

```
This option is only
valid if commercial
power is not present
```

Figure 4-11 Screen Display Following Incorrect Shutdown



System Reset Button

The recessed Reset button on the back of the NET-PATH resets the microprocessor in the NET-PATH and initiates a warm boot. Both warm and cold boots may result in the loss of active event data. Data stored in flash memory is not affected.

Tests

Choose the Tests option from the main menu to perform basic tests on the LCD display and navigation buttons to verify they are functioning properly. All display segments illuminate for the LCD test.

Troubleshooting

Refer to the following troubleshooting aids. Find the symptom that most closely matches your situation, and then perform the checks described for that symptom. If these steps fail to correct the problem, contact your NOC system administrator for technical assistance.

Troubleshooting Incoming Calls

NET-PATH does not answer or is busy.

Possible Cause:

- The telephone line is inoperative. Verify the telephone line can dial out and receive calls. If not, contact your local telephone representative.
- The NET-PATH is off-hook, trying to place a call. Check the OH indicator on the LCD display.
- Defective telephone cable. Replace cable.
- Country code not set for International modem. See “Country Code Definitions for Multi-Tech Modem Model MT5634SMI” on page 4-6. See “Country Code Definitions for Multi-Tech Modem Model MT5656SMI” on page 4-8.

NET-PATH answers (off-hook), but no carrier is detected (DCD is OFF).

Possible Cause:

- Calling modem is bad. Replace modem.
- Calling with non-compatible modem. Replace with correct modem.
- Noisy or bad telephone line. Contact your local telephone representative.

NET-PATH answers, but the database or APP cannot download.

Possible Cause:

- Noisy or defective telephone line. Contact your local telephone representative.
- Mismatched database (wrong password/site ID). Verify with Polling and Analysis Center.

Call terminates before the download completes.

Possible Cause:

- Noisy or defective telephone line. Contact your local telephone representative.



Troubleshooting Outgoing Calls

NET-PATH does not go off-hook.

Possible Cause:

- Incorrect database. Event is not programmed, is not programmed correctly, current time is not in the Action window, or event duration is too long.
- No App loaded.

Incoming calls are not received at the Polling and Analysis Center.

Possible Cause:

- Bad database. Incorrect telephone number.
- Modem at the receiving end is not set for auto-answer.
- Restricted telephone line. Contact your local telephone representative.

Call was received at the Polling and Analysis Center, but did not have a carrier.

Possible Cause:

- Non-compatible or defective modem at the Polling and Analysis Center.
- The modem at Polling and Analysis Center is not in data mode.
- You selected an incorrect database option.

Call received at Polling and Analysis Center, modem connected, but message not received.

Possible Cause:

- Bad database. Incorrect protocol flag.
- Bad telephone line. Contact your local telephone representative.
- Incorrect receiving option (parity, speed, stop bits, data bits)



5

Serviceable Components

General

The following NET-PATH components can be serviced either at the factory or in the field.

Field	Description
UPS Battery	Replacement kits are available from Teltronics. You can replace this unit in the field. See “UPS Battery Replacement Procedure” on page 5-2.
Coin Cell Battery	The coin cell battery has a service life is four to five years. This unit can be replaced in the field. See “Coin Cell Battery” on page 5-3.

UPS Battery

The NET-PATH contains a 12-volt, rechargeable UPS battery. The life expectancy is one to three years, depending on variables such as temperature and recharge cycles. The NET-PATH fixed event messages signal when the battery is unable to hold a charge, or is constantly charging. Battery replacement kits are available from Teltronics.



Warning *There is a danger of explosion if you replace the battery incorrectly. Replace **only** with the same or equivalent battery type recommended by the manufacturer. Dispose of used batteries according to the manufacturer’s instructions.*

Use care when working with your battery. Do not touch the battery with conducting materials, such as rings, bracelets, keys, and tools. Do not open or mutilate the battery. Do not dispose of the battery in fire.



UPS Battery Replacement Procedure

The replacement battery assembly includes a metal bracket and cable assembly.

To replace the NET-PATH UPS battery

- 1 Remove the commercial power connection from the rear of the NET-PATH.
- 2 Use the LCD panel navigation buttons to scroll through the menu and select **Safe Shutdown**.
- 3 Disconnect the cables from the back of the NET-PATH. Be sure to mark your cables so you can reconnect them quickly.
- 4 Remove the NET-PATH from the rack.
- 5 Remove the screws that secure the NET-PATH cover to the chassis.
- 6 Carefully lift the cover off to expose the battery. Be careful not to disturb the ribbon cable connection to the LCD panel.

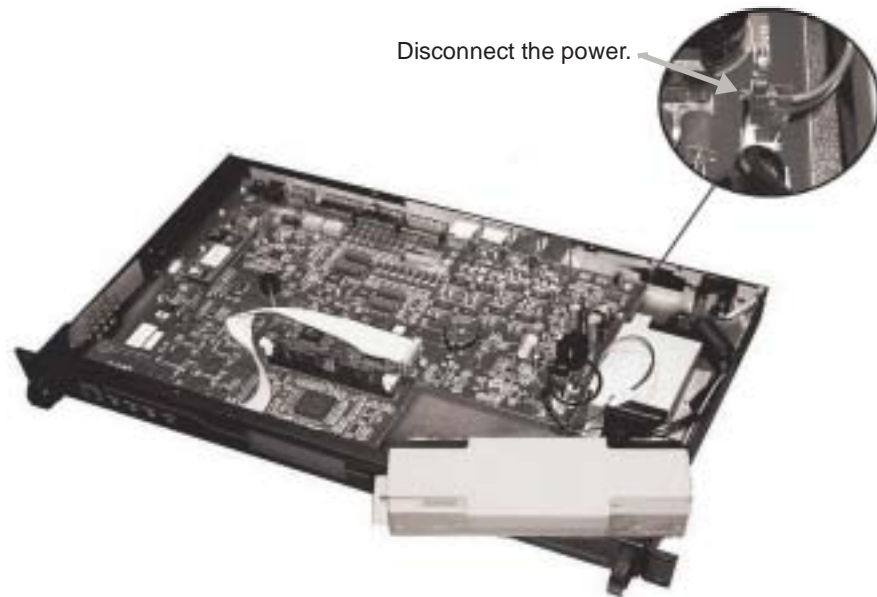


Figure 5-1: NET-PATH Battery Connection

- 7 Disconnect the battery power connector from the main board.
- 8 Carefully remove the screws that secures the battery chassis. The screws are located on the bottom of the NET-PATH.
- 9 Carefully lift the battery out of the NET-PATH.
- 10 Insert the new battery assembly and secure it with the retaining screws. Be sure the new battery has the same physical and electrical orientation as the old battery.
- 11 Attach the new battery power connector to the main board making sure the red wire is on the left when viewed from the front of the NET-PATH. Be careful. The connector is keyed, but it is possible to force it in backwards. This will change the polarity of the battery and will damage the NET-PATH.
- 12 Reinstall the cover and replace the retaining screws.
- 13 Insert the NET-PATH into the rack and secure it. Attach the cables to NET-PATH.
- 14 Apply power to the unit.



- 15 Use the LCD panel navigation buttons to perform a battery reset. Chapter 4 for more information.

The battery LED indicator should illuminate to indicate that the battery is fully charged, or flash slowly to indicate that the battery is charging. If the battery LED indicator is off, the new battery may be defective, or its polarity may be incorrectly oriented. Reverse the battery to determine if it is polarity problem.

Coin Cell Battery

A 3-volt, 175 mAh lithium coin cell battery maintains the NET-PATH Real Time Clock (RTC) settings. The life of this battery is normally four to five years.

Teltronics recommends that you replace this battery whenever you replace the NET-PATH 12-volt UPS battery. Replace the battery with a Panasonic BR2325, or equivalent.

To replace the coin cell battery

- 1 Remove the commercial power connector from the back of the NET-PATH.
- 2 From the LCD panel main menu, select Safe Shutdown.
- 3 Disconnect the cables from the back of the NET-PATH. Be sure to mark you cables so you can reconnect them quickly.
- 4 Remove the NET-PATH from the rack.
- 5 Remove the screws that hold the NET-PATH cover; then, carefully lift off the cover.
- 6 Locate the coin cell battery. Note the polarity. You should see a positive (+) symbol on top of the battery.



Figure 5-2: NET-PATH Coin Cell Battery

- 7 Gently lift the retaining clip. Use care – too much pressure on the retaining clip can cause it to break.
- 8 Carefully remove the battery from the molded housing.
- 9 Insert the new battery. Be sure that it is properly seated in the housing and the positive (+) symbol is on top.
- 10 Reinstall the cover and replace the retaining screws.
- 11 Insert the NET-PATH into the rack and secure it. Attach the cables to NET-PATH.
- 12 Apply power to the unit.
- 13 You may need to reset the time using the Command Line Interface (see page 3-5), or by downloading a new database.

Jumper Connections

Your NET-PATH device comes with jumpers preset at the factory. If you must change a jumper setting, locate the jumper in the figure below; then, set the jumper according to the setting indicated in Table 5-1.

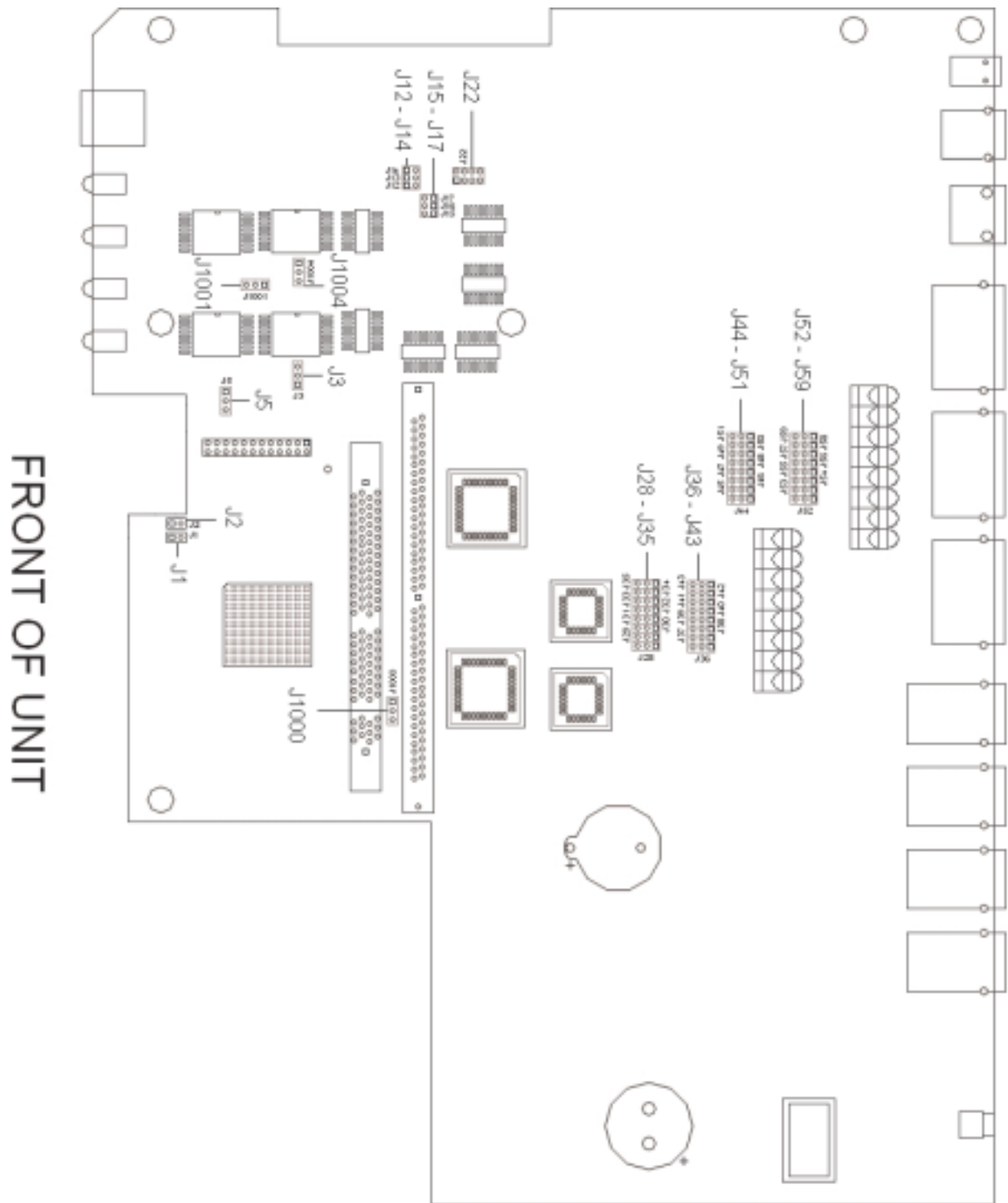


Figure 5-3: NET-PATH Jumper Locations





Note The jumpers in the following table appear as they are oriented on the board, as seen from the front of the NET-PATH. Shaded areas represent jumper connections. **DO NOT** change these jumpers unless directed to do so by Customer Service. Changing these jumpers may result in operation failures.

Table 5-1:NET-PATH Jumper Settings
















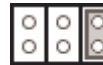




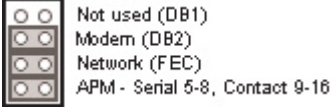
Jumper	Setting	Description
J1	 J1	RAM Chip Select
J2	 J2	RAM Chip Select
J1000	 J1000	External Flash Sizes - 16 MB
	 J1000	External Flash Sizes - 32 MB (default)
J3, J1004	 J3	Flash Write Protect - On
	 J1004	
	 J3	Flash Write Protect - Software
J3, J1004	 J1004	Flash Write Protect - Software
	 J3	
	 J1004	Flash Write Protect - Off
J5, J1001	 J5	Flash Type - Internal
	 J1001	Flash Type - External
 J5	Flash Type - External	
 J1001		
J12, J15	 J14 J13 J12	RAM Size - 64 MB or 128 MB
	 J17 J16 J15	
J13, J16	 J14 J13 J12	RAM Size - 32 MB
	 J17 J16 J15	
J14, J17	 J14 J13 J12	RAM Size - 16 MB
	 J17 J16 J15	

Table 5-1: NET-PATH Jumper Settings

J22		Modules Present
J28 - J35		Contact Sensors 1-8 RS232 (normal voltage)
		Contact Sensors 1-8 RS423 (low voltage)
J36 - J43		Contact Sensors 1-8 RS232 (normal voltage)
		Contact Sensors 1-8 RS423 (low voltage)
J44 - J51		Contact Sensors 9-16 RS232 (normal voltage)
		Contact Sensors 9-16 RS423 (low voltage)
J52 - J59		Contact Sensors 9-16 RS232 (normal voltage)
		Contact Sensors 9-16 RS423 (low voltage)



Note See "Contact Sensor Strap Options", page 2-8 for more information about jumper settings.



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SEB NET-PATH™ Installation and Operation Guide



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